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Railway Age Gazette

Volume 63 August 31, 1917 No. 9

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Fuel Economy and Locomotive Operation

Many roads have an organized department for supervising the handling and performance of locomotives. Never before has a department of this kind had such an opportunity to show its worth. With the cost of fuel to the railroads as large as it now is no stone should be left unturned to have fuel used economically. It has been shown in the past that great results can be obtained by adequate supervision. The enginemen must be thoroughly trained in the matter of fuel economy. They must be shown how to get the most out of every pound of fuel fired and further, it must be seen that they follow instructions. The only proper way to do this is by supervision. The addition of a few more supervisors to the fuel organization will be money well spent when the advance in the cost of fuel is considered. More power must be gotten out of the locomotives. Enginemen must be taught how to use their power to the best advantage. This can only be accomplished by careful and proper instruction, together with adequate supervision. To be sure, the war has and will create a shortage of labor on the railways and it may be thought that men can not be spared for this work; but the conservation of the fuel and the greater reliability of the service must also be considered and men enlisted in this work may be of greater service to the railroads of the country, than in any other place. It is a problem which should be given the most careful consideration.

Awaken the Small Shipper

A note on another page tells of the excellent record of a New Orleans firm in unloading one-fourth of its cars on the same day that they came in; that is, before the railroad would *begin* to count the time. This note is a reminder that the smaller traders—those who load or unload from three to a dozen cars a week—present the most difficult problem in car conservation. The large establishments can employ an experienced traffic man to give his whole energy to the work, driving others, where necessary, and keeping everybody constantly alert. With operations of less magnitude, the station agent and the shipper or consignee have got to combine their efforts and co-operate, else the necessary enthusiasm will be lacking. The trainmaster must spur the agents, if they need spurring, and the division freight agent must arouse any slow consignee. It is particularly important to make plain to the consignee that the good records of the large establishments are not due to any favoritism extended by the railroad. Neither should railroads ask the merchant to improve his service simply as a favor to the carrier. Every reasonable railroad man does surely appreciate favors in this field, and it is to be hoped that he never forgets to express his appreciation; but the main argument to be presented to the public is a lucid and forceful statement of the cold facts, frank, full and detailed. Car conservation helps all concerned; to tell this to all concerned is a never-ending job.

What Are Railroad Accidents?

In the study of railroad accidents and their causes there is a constant necessity of remembering the comprehensive nature of the term "accident." Not the least of the accidental features of such casualties is the accident of time and of place. In the butting collision of trolley cars at North Branford, Conn., on August 13, seventeen persons were killed; and everybody who travels is justly indignant as he reads of the incredibly careless management which continues to use, with high-speed electric cars, the same old methods of operation which prevailed in the days of horse cars. But only seven days later, within 25 miles of North Branford (near Saybrook Junction), half as many persons lost their lives in a "railroad accident" for which the railroad management is in no sense responsible. Nine out of ten persons, riding in an automobile, were killed by a locomotive at a railroad crossing. A cynic might, very plausibly, ask why, if people will rush to their death voluntarily, at crossings, there should be so much outcry when they are killed in the cars! Neither of these "accidents" has any relation to the other, so far as the details of prevention are concerned. Yet their being so nearly in juxtaposition may well call attention once more to the need of getting down to actual causes and of patient attention to the real issues, in every case, uninfluenced by special interests or the clamor of shortsighted advocates.

The fact that within a given territory, within a given time, a hundred people are killed on railroad premises by their own fault, when only a half or a tenth of that number are killed by the fault of the railroad or its employees does not, indeed, afford any excuse for the railroad, or justify any relaxation of efforts at improvement; but it does show that a good deal of the activities of press and legislature are misdirected, and that much of the time of the courts is wasted. The operation of twenty thousand miles of busy railroad—in Great Britain or America—for a year or longer, with not a passenger killed except by his own fault, is a great achievement. This is one side of the shield. A statement of all casualties, great and small, on the steam railroads of the United States for a year—one hundred and eighty thousand, three hundred and seventy-five in the last report issued—shows the other side. Each figure has its own lessons; but each side of the shield is often shown in such a way as to lead the superficial observer to think that he is looking at the other side. If a clear distinction were always made between "railroad accidents" not due to the fault of either railways or their employees and railroad accidents actually due to them, it would be easier to secure intelligent regulation to reduce accidents.

A PRIZE FOR A STUDY OF THE RECONSIGNMENT PRIVILEGE

IS the reconsignment privilege as it is used and abused now a pernicious form of rebate or has it become so much a part of the commercial customs of the country that it would be economically wrong to make a substantial charge for this privilege? There can be no doubt that the reconsignment privilege puts a very heavy burden on the railroads. Just how heavy the *Railway Age Gazette* would like to demonstrate. Specific instances are occasionally made public where this reconsignment privilege is grossly abused not only to the detriment of the railroads but of the consumers. In some of the investigations made last winter at New York in regard to food speculation it was brought out that a carload of perishable foodstuff was sometimes sold a dozen times over, and nearly each time it was sold a reconsignment was made. A carload of potatoes was sold by a local jobber to a New York jobber and by him sold to a Chicago jobber and the car reconsigned to Chicago; the Chicago jobber sold it to a Cincinnati dealer and the car was reconsigned to Cincinnati; the Cincinnati dealer sold it to a Cleveland dealer and the car was reconsigned to Cleveland, and so the thing went on through half a dozen more transactions covering a period of more than thirty days. All this time the car itself was standing in the yards in one of the upstate cities of New York.

Yardmasters and station agents are the railroad men who have first-hand knowledge of the extent to which the reconsignment privilege is used, the kinds of commodities that are reconsigned, and the expense to which the railroad company is put. In order that this subject may be fully discussed and as much light thrown on it as possible, the *Railway Age Gazette* offers a first prize of $50 for the best article dealing with this subject and a second prize of $25, and will pay space rates for any other articles that are used. Discussions of this subject should be condensed as much as possible but no rigid limit will be placed on the length of articles. Contributions should be sent to the Woolworth Building, New York City, and must reach New York not later than September 29. The *Railway Age Gazette* reserves the privilege of condensing any statistics which are presented if such condensation can be done profitably.

Three judges will be selected and their names announced in the near future. What is especially desired is a statement of facts culled from experience. Such information in regard to reconsignment as this contest may bring forth should be of value, especially at the present time. The names of roads will, if the author so desires, be held confidential, but we strongly urge competitors to name commodities and to give figures for length of time held, destinations to which reconsignments are made, etc., and to discuss the subject with the greatest possible frankness. It is through such a discussion as this, if participated in by a sufficiently great number of men with first-hand knowledge of the subject, that the *Railway Age Gazette* hopes to be able to make available the facts.

RECENT INCREASES IN RAILWAY EFFICIENCY

IT is becoming well understood that, second only to success in enlarging and training its army and navy, the thing most needful to enabling the United States to do its part in winning the war is to increase the efficiency of all the country's productive and distributive processes. Of all the concerns which have increased their efficiency in this good cause the railways probably stand foremost. They are today handling a much larger amount of traffic with each freight locomotive and each freight car than was ever done before in their history or in that of any other railway system in the world.

Those who like to snarl at the railways ask why it required a national crisis such as the present to cause their managers to introduce more efficient methods. It did not. They were constantly introducing more efficient methods long before we got into the war. The doctrinaire advocates of government ownership, such as Frederic C. Howe, say that the increases in efficiency are due to concentrated control and that therefore they are an argument for government management. But neither the premise nor the conclusion of this argument has any foundation. No government railways ever got such operating results as our railways are now getting; and our own railways would not be getting them if they were under government management. It is not merely the concentrated direction, but it is still more the brains and energy that are being put into the general direction of the roads, and into their operation that are getting the results. Such brains would not be put into their direction and operation under government ownership.

We said above that the efficiency of the railways was being constantly increased before our entrance into the war. The facts regarding the increases in efficiency which have occurred both since the country entered the war, and during the year preceding, make a remarkable story. We shall try to tell here only the part of it relating to the augmentation of the service rendered by the railways with each locomotive and each car.

The largest freight traffic handled by the railways in any fiscal year prior to 1916 was that for the fiscal year ended on June 30, 1913. In the years ended on June 30, 1914, and 1915 the traffic showed heavy reductions, there were many idle cars throughout both years, and therefore it was impossible to secure the maximum service from each engine and car. In fact, the traffic was so light and earnings were so small that purchases of new equipment became very small and there were actually 29,351 fewer freight cars and about 700 fewer locomotives in service on June 30, 1916, than there were on the same date in 1915, and 340 less cars than there were on June 30, 1914.

With this reduced number of cars and locomotives the railways had to handle in the fiscal year 1916 much the largest traffic they had ever had. With a slight increase in cars and locomotives they handled in the calendar year 1916 a still larger business, and with an increase of less than 1 per cent in locomotives and of perhaps 3 per cent in freight cars they are today handling a vastly larger business than they did in the calendar year 1916.

What do these facts indicate as to the increases which have occurred in the service being derived, on the average, from

each locomotive and each car? The following table throws light on that question:

TON-MILES HANDLED PER FREIGHT LOCOMOTIVE AND PER FREIGHT CAR

	Per Freight Locomotive	Per Freight Car
Fiscal year 1908	6,461,907	104,524
Fiscal year 1909	6,424,796	105,514
Fiscal year 1910	7,237,569	114,755
Fiscal year 1911	6,913,259	115,593
Fiscal year 1912	7,056,034	119,194
Fiscal year 1913	7,843,663	132,566
Fiscal year 1914	7,368,713	123,974
Fiscal year 1915	7,087,491	117,483
Fiscal year 1916	8,954,248	147,444
	Per Freight Locomotive	**Per Freight Car**
*Calendar year 1916	9,953,660	162,630
*Calendar year 1917	11,447,000	187,000
Increase 1916 (fiscal) over 1908 (fiscal)	38.6 per cent	41.1 per cent
Increase 1916 (fiscal) over 1915 (fiscal)	26.3 per cent	25.5 per cent
Increase 1916 (fiscal) over 1913 (fiscal)	14.2 per cent	11.2 per cent
*Increase 1917 (calendar) over 1916 (fiscal)	28.4 per cent	27 per cent
*Increase 1917 (calendar) over 1915 (fiscal)	62.2 per cent	59 per cent
*Increase 1917 (calendar) over 1913 (fiscal)	46.6 per cent	41 per cent
*Increase 1917 (calendar) over 1908 (fiscal)	77.4 per cent	78.9 per cent

* Estimated.

The statistics for the calendar year 1916, while estimated, are based upon the number of freight cars and locomotives known to have been in service and upon the actual freight earnings during the year. The estimates for the calendar year 1917 are based upon the assumption that each car and each locomotive will handle 15 per cent more freight in the year 1917 than it did in the calendar year 1916; and this is a perfectly safe estimate, in view of the records which are known actually to have been made in the movement of traffic during the three months of the year already past. The available statistics indicate an increase of 13 per cent in freight car efficiency in April, 14 per cent in May and 22 per cent in June. They indicate even greater increases in locomotive efficiency.

Going back to the period before we entered the war, the statistics show that in the fiscal year 1916 the railways handled 14 per cent more freight business with each freight locomotive and 11.2 per cent more freight business with each freight car than they did in the fiscal year 1913, which was the banner year before. In other words, they handled 7,843,663 ton miles with each engine and 132,566 with each car in 1913; and 8,954,248 with each engine and 147,444 with each car in 1916. The increase per locomotive in 1916 over 1915 (fiscal years) was 26.3 per cent and per freight car 25.5; while in 1916 over 1908 the increase per locomotive was 38.6 per cent and per freight car 41 per cent.

The calendar year 1916 showed a still further great increase in efficiency. As compared, for example, with 1913, the banner fiscal year prior to 1916, the increase in business handled per freight locomotive was 27 per cent, and per freight car 23 per cent. It will be noted that the foregoing increases in efficiency occurred before the United States entered the war and before the centralized direction of the railways by the Railroads' War Board was established, and that therefore all talk about the railways not having increased their efficiency until we got into the war is groundless.

The entrance of the country into the war, however, affording, as it did, the opportunity to operate the railways as a single system, and to appeal to the individual managements, the employees and the patrons of the railways, on patriotic grounds, to co-operate vigorously in increasing their efficiency, has enabled some remarkable improvements in the use of engines and cars to be made. As the table shows, if the railways handle relatively as much more freight traffic in each remaining month of the calendar year 1917 with each locomotive and car as the improvement in their performance in April, May and June indicates that they will, they will make a record far surpassing their best past performance. With each locomotive we estimate they will handle 28.4 per cent more business than in the fiscal year 1916; 62 per cent more than in the fiscal year 1915; 46.6 per cent more than in the fiscal year 1913, and 77.4 per cent more than in the fiscal year 1908. With each freight car we estimate that they will handle 27 per cent more business than in the fiscal year 1916; 59 per cent more than in 1915; 41 per cent more than in 1913 and 79 per cent more than in 1908.

When it is considered that the remarkable increases in the efficiency of the use of equipment which have been made since the present organization under the Railroads' War Board was formed have followed directly on the heels of unprecedented increases in the efficiency of its use in the year or year and a half immediately preceding, the record becomes a very remarkable one.

The railways will never get credit for what they have done and are doing from the doctrinaire advocates of government ownership, or from those who consider it good business or good politics to snarl at them; but they will get full credit from the American public when the facts become as widely known as they should be.

ARREST THE DETERIORATION OF RAILWAY TRACK

THE track of most railroads is not being maintained to normal standards today. As a result it is deteriorating at a time when the country is demanding the maximum service from the railways. Such a situation would be serious at any time. It is doubly so now when it is vital that transportation facilities be kept in the best possible condition.

The roads of the United States are handling the heaviest traffic in their history. As noted on page 220 of our issue of August 10, statistics covering the operations of Class 1 roads—those earning over 1,000,000 gross annually—for the first five months of the present calendar year show operating revenues of $1,548,348,314, an increase of $348,000,000 or 29 per cent over the same months of 1913, the period of highest railway earnings previous to the war. During the same interval transportation expenses increased 30.3 per cent and maintenance of equipment expenditures 27.6 per cent. Charges for maintenance of way for these same roads for the first five months of 1917 were $177,319,957, an increase of only $15,000,000 or 9.3 per cent over 1913, while the percentage of these expenditures to total operating expenses fell from 18.3 per cent in 1913 to 15.9 per cent this year. Thus with an increase in business handled of 29 per cent the increase in the amount of money spent for the upkeep of the roadway and structures was only 9.3 per cent.

This tendency was most prominent in the eastern and southern districts. In the former an increase of 29.2 per cent in operating revenues was accompanied by an increase of only 4.2 per cent in maintenance of way charges. In southern territory a growth of 25.1 per cent in traffic led to only 4.1 per cent heavier maintenance of way expenditures. In the western district conditions were more nearly normal, the 30.4 per cent increase in operating revenues being accompanied by a rise of 16.8 per cent in expenditures for maintenance of way. A striking illustration of the situation on some of the eastern and southern roads is afforded by the statement of operations of an important road in this territory for July which shows an increase in traffic of 20 per cent accompanied by a decrease in maintenance of way expenditures of 22 per cent.

While a superficial analysis of these figures might suggest that this reduction in maintenance of way charges was gratifying, reflecting increased efficiency in this department, more careful consideration will show that this is not the case. The increases in maintenance charges indicated would be too small even in comparison with the growth of the business in normal times, and they are far too small under the present abnormal conditions. Railway rates have remained practically stationary in this period so that a comparison of oper-

ating revenues is a fairly accurate measure of the service performed. Unit costs of maintenance of way work, on the other hand, have been far from stationary. Four years ago the average wage rates for laborers in the maintenance of way department was not far from $1.60; now it will probably average at least $2.30, with many roads paying from $2.50 up to $3. As approximately 56 per cent of all maintenance of way expenditures are for labor, this increase of almost 45 per cent in unit rates of pay is alone equivalent to an increase of 25 per cent in the total maintenance of way expenses without taking into consideration the greatly decreased efficiency of labor which always follows rapid increases in wage rates in times such as this. Measured in terms of the service performed, the maintenance of way accounts probably have been increased well over 30 per cent by changes in the labor situation alone.

Materials have also risen rapidly in cost, few, if any, now being procured at the same or lower prices than prevailed in 1913. Rails have advanced $10 per ton and other steel products have doubled in cost and more. While a wide variety of materials are used in maintenance of way work, each with its individual price tendencies, it is conservative to estimate that on the average their cost increased as much as that of labor. Therefore, if the traffic had been the same in 1917 as in 1913 the conditions in the labor and material markets alone would have led to a large increase in expenditures for maintenance of way to secure the same results. As the traffic has increased over 29 per cent in this period a still further increase in maintenance of way expenses should be expected if the wear and tear on the property caused by the movement of this additional traffic is to be overcome.

Instead of the increase in the charges to this account bearing some reasonable relation to the increase in the traffic handled and to the advances in unit costs of labor and materials, the statistics quoted at the beginning of this discussion show that it has been only 9.3 per cent. This demonstrates beyond question that the expenditures for the upkeep of the physical property are not keeping pace with the burden imposed on it by the traffic and by changing conditions. Various explanations, all more or less correct, may be offered for this condition. Labor may be scarce or even impossible to secure. Materials cost more than they did four years ago. These and other facts require no proof as they are of common knowledge to all. But they do not alter the fact that deterioration is taking place.

One of the most disquieting phases of this entire situation is the complacency with which many railway managements seem to be regarding this condition. As a writer states in a letter to the editor in another column, the officers riding over the track see that it is getting rough, realize that the roadmasters do not have a sufficient number of men at work and do little or nothing. Resignation to this state of affairs does not meet the problem, neither does it remove the danger of failure of our railways in the emergency through which they are passing. It is true that a large portion of the repairs on a well-maintained property may be postponed for a short time, but this cannot be done indefinitely. No one can tell the duration of the present emergency. The government is planning on a three years' war. The railways cannot stand the continuance of the present retrenchment in maintenance of way for such a period without disaster. They must meet this situation squarely, and plan at least upon as safe a basis as the government.

This problem is not one requiring the attention merely of those officers whose duties are limited to the maintenance of way department. More help is necessary from the general managers and higher officers. When the demands of the government for transportation are so extensive it is natural that these officers should give almost their entire attention to operating matters in order that troops and military supplies may be moved promptly and with the minimum of interference with normal business. As a result of their concentration on the transportation problem they are giving less than the usual amount of attention to maintenance matters at a time when this attention is required even more than normally.

Help is needed and needed quickly. Three months from now, or even two months, will be too late, for the tracks will then be going into the winter. Unless relief is secured quickly and more work is done at once the tracks will be in bad shape this winter, while facing a heavier traffic than they have ever had to bear.

Even with the most active efforts it will be impossible for much of the ground already lost to be made up this year, and there is certain to be a large accumulation of deferred maintenance at the close of the year.

The normal net earnings of the roads are being swelled to the extent that this deferred maintenance is accumulating. Since such amounts are not real savings, but are only postponed expenditures, England has permitted the roads in that country (which are laboring under conditions similar to the railways in the United States), to put aside reasonable amounts to compensate for these postponed expenditures, and the amounts so set aside are included in operating expenses before net earnings are computed, just as if the expenditures had actually been made. The funds thus accumulated will be available for maintenance expenditures as soon as men and materials can be secured without drawing on the earnings of later years. Insofar as it is actually impossible to get men and materials for maintenance, this plan has much to commend it to the railway managements of the United States and to the Interstate Commerce Commission as a sound, business-like proceeding under present conditions.

NEW BOOKS

Railway Nationalization and the Average Citizen. By William H. Moore. 181 pages, 5 in. by 7¾ in. Bound in cloth. Published by McClelland, Goodchild & Stewart, Limited, Toronto, Ont. Price, $1.35.

The Irresponsible Five: A New Family Compact. By William H. Moore. 67 pages. 7¼ in. by 5 in. Bound in cloth. Published by McClelland, Goodchild & Stewart, Limited, Toronto, Ont.

The question of government ownership and management of railways is of especial interest in Canada at the present time. There has been much discussion of the way in which the government-owned Intercolonial has been managed and the government-built National Transcontinental has been constructed. The Intercolonial has, on the whole, failed to earn even its operating expenses, much less interest on the investment in it, since it has been owned by the government. The National Transcontinental cost vastly more than the original estimates and the government commission which was created to investigate its construction rendered a report charging gross waste and incompetency in the building of it.

In spite of the fact that government ownership and management of railways in Canada has thus far been a colossal failure, owing chiefly to the operation of influences which it is especially difficult to prevent in democratic countries, the present government has committed itself to the acquisition of the Canadian Northern. This system now has 9,295 miles which, added to the present government railways, will make a state-owned mileage in Canada of over 13,000 miles. The main reason why the government has proposed the acquisition of the Canadian Northern is that the Dominion government has guaranteed the interest on the road's bonds, that it is unable to earn enough to pay its fixed charges and at the same time raise money for necessary improvements and extensions, and that if the government allows it to stay in the hands of its present owners the road will either have to go through bankruptcy or the government will have to continue to make it advances. The government does not wish to

let it go through bankruptcy and at the same time it takes the position that if the people of Canada are to make any more advances to the Canadian Northern they ought to own the road and get the benefit of future increases in the value of the property.

Mr. Moore's book "Railway Nationalization and the Average Citizen," was written before the government's proposal for the acquisition of the Canadian Northern was submitted to Parliament, but it constitutes an excellent answer to all the arguments in favor of this step. In a word, the answer is that government management almost certainly will be more costly and less enterprising than private management. If the road is turned over to government management the public will have to pay whatever deficit it may incur, and the deficit which it will have to pay will be larger than would be the deficit which would be incurred and which the public would have to pay if the railway were left under private management. In other words, under government management the road, because of its more expensive operation, will place a heavier burden on the shippers and taxpayers of Canada than it would under private ownership. It is true that under government ownership there will be no private stockholders to make money out of the property, but how does it hurt the public for private stockholders to make money out of a property if they afford such good management that the burden put upon the public is actually less than it would be if the public owned the property?

The contention that railway transportation actually costs the public, including those who pay the rates and those who pay the taxes, less under private ownership even when private stockholders make money out of it than it does under government ownership, is not merely a theory, but is a proposition demonstrable by the almost uniform experience of the entire world. Nowhere else has experience afforded more support to this proposition than in Canada. It is certainly remarkable that a country in which government ownership has thus far been an utter failure should be planning to extend this policy. The financial and commercial future of Canada would be much brighter if its politicians and people were influenced less by catch-words and more by actual facts.

The reasons why private ownership and management of railways are better for most countries, and especially for democratic countries, than government ownership are very interestingly and entertainingly, and at the same time forcefully, set forth in Mr. Moore's book, "Railway Nationalization and the Average Citizen." In its first two chapters which are entitled "The Platitudinarians" and "The Doctrinaire School," the author attacks those whose arguments for government ownership consist chiefly in the familiar platitudes such as "Trust and the public" and "Public ownership seeks only the welfare of the many; private ownership strives for the wealth of the few," and those who base their arguments in favor of it on "so-called fundamental principles," which on examination prove to be anything but fundamental. One of these latter, for example, is what Mr. Moore calls "the highway argument" and another is "the universal use argument."

Mr. Moore next examines the actual results of the operation of public utilities in Canada, and especially of government telephones in Manitoba, where the failure was as complete as it has been in the operation of the Intercolonial. He next examines the experience of other countries, especially those of Europe, showing that in Prussia, for example, where government management has been a comparative success, the political and other conditions are entirely different from what they are in Canada. He then proceeds to a somewhat detailed consideration of the railway situation in Canada and shows that the railways which have been designed, built and managed under the company system in that country have contributed far more to its prosperitty and development than those which have been designed, built and managed under public ownership.

Mr. Moore's book, "The Irresponsible Five," is a critique of the report made by the majority members of the Royal Commission to Inquire into Railways and Transportation in Canada. The majority was composed of Sir Henry Drayton and W. M. Acworth, and it recommended government acquisition of practically all the railways in Canada, except the Canadian Pacific, and their operation by five trustees who would be chosen by the government, but under the plan favored would be free from political influence. Mr. Moore severely criticises some of the statements of fact in the report and also the plan for acquiring and operating the railways which it recommends.

Both of these books are well worthy of careful perusal by all who are interested in the subject of government ownership of public utilities.

Poor's Manual of Industrials. Published by Poor's Manual Company, 80 Lafayette street, New York. Price $10.

This 1917 issue of Poor's Manual of Industrials is corrected up to August 1. It contains income accounts and balance sheets of nearly all of the larger industrial companies and is compiled with the care, thoroughness and broad intelligence which Poor's Manual Company has put into its Railroad, Industrial and Public Utility Manuals for a great many years. With a large increase in interest of the investing public in industrials, Poor's Manual fills a real need. Prior to the requirements of the Interstate Commerce Commission in regard to railroad annual reports in 1907, Poor's Manual of Railroads was the one source from which uniform statistics of railroads could be obtained. Now with the Interstate Commerce Commission figures available, Poor's Manual of Railroads is still the most convenient form in which railroad statistics can be got at, but the Manual of Industrials is indispensable to any statistical library because much of this information is not available anywhere else.

Railroad Construction, Theory and Practice. By Walter Loring Webb. 4 in. by 7 in. 841 pages. Illustrated. Bound in morocco. Published by John Wiley & Sons, Inc., 432 Fourth avenue, New York City. Price $4.

This is the sixth edition revised and enlarged of the well known treatise on railroad construction which is intended both as a text book for the use of students in college and technical schools and as a hand book for the practicing engineer. In the preface of this edition the author explains that the advance in the science of railroad construction made during the last few years has been so great as to make the extensive rewriting of the book necessary. Special credit is given to the American Railway Engineering Association for its work. The first 100 pages are devoted to field engineering—surveys, alinement, curves, etc. Earthwork occupies 84 pages; trestles, tunnels and minor structures cover an equivalent space. About 100 pages are devoted to the various elements of track construction and a smaller space to buildings, yards, terminals and signaling. The relation of train operation to the economics of railway location is discussed in detail as in the earlier editions. Nearly 200 pages are devoted to curve and earthwork tables.

INTERNATIONAL TRAFFIC OF THE SWISS RAILWAYS—In 1916 the passenger traffic of the Swiss Federal Railways with Italy was 38,461 journeys and the freight traffic 700,777 (metric) tons. Passenger traffic with France was 134,871 journeys and the freight traffic 27,859 tons. To and from Germany through passengers numbered 140,619, while the freight traffic was 2,639,817 tons, of which 2,216,138 tons went into Switzerland and 423,679 tons came out.

Letters to the Editor

OBJECTIONS TO UPPER BERTH

New York.

To the Editor of the Railway Age Gazette:

At this time, when the railroads are making such strenuous efforts to load cars, including passenger equipment, to full capacity, it may not be amiss to consider the objections made to traveling in upper berths. Speaking from my own experience, and from that voiced by other travelers, here are some of the reasons why upper berths are objected to:

(1) Lack of facilities to care for clothing. The coat hanger and the little hammock are insufficient. Why not attach, in the upper berth, a *folding* shelf, either on the partition, or above or below the hammock?

(2) Lack of a window. Passengers like, especially when traveling through country new to them, to look out early in the morning. I also like to see where we are, so I may know whether the train is on time, and can calculate—when passing a station—how much longer I can stay in bed. Presumably the ingenuity of our car builders will some day provide windows for upper berths.

(3) If retiring early, the light is very objectionable. Perhaps here, too, the ingenuity of our car builders will devise ways and means of overcoming the difficulty.

If the above mentioned conditions are remedied, I don't believe I would care whether I have an upper or a lower berth, and I know other people feel the same about it.

Traveler.

SAVE THE TRACK

"Somewhere in America."

To the Editor of the Railway Age Gazette:

I have been doing considerable reading on war topics and war conditions lately and between the lines I have noticed with deep concern the tendency to let everything slip that does not have a direct bearing on the promotion of the war. This is true in every factory and every mine in the country. It is also true on every railroad. Under the spur of the necessity for preparedness to move troops and ammunition on a minute's notice, the railroads have bent every effort to prepare for the work which they may be called upon to do. They have their rolling stock ready and their engines are virtually under steam waiting for the soldiers to entrain. Everything is in readiness for the first dash, but what about the track?

The track is on the rapid road to ruin the same as the track in every belligerent country in Europe. We have sent some of the best railroad men to Russia because the track there had gone to smash and we are now sending regiments of railroad men, from chief engineers to track laborers, to France to rebuild the track that has been allowed to fail for lack of maintenance. In Germany not only the railroads, but even their wonderful highways have gradually fallen behind until the greatest danger that country now has to face is the total collapse of the one-time perfect system of railroads and highways.

Our railroads have not collapsed (I pray God they never shall), but the same danger is here, nevertheless; and the most significant thing is the attitude of our officers. The general manager is not thinking of the track, but of the train loads of soldiers that must be moved. He rides over my track and knows it is getting bad, but he realizes that I have not been getting the new material I should have and he can see the pitifully small force of track laborers. The division engineer will go over my district and get a rough ride, but does he write me a note about it? Of course not. Instead he goes to his office and wonders where he can get men for me.

We have a National Defense Board on which there are traffic men, but no track men. There should be a man there who knows track and knows men, a man who could look over the newly established war routes as mapped out by the traffic men and then go over those routes and see the disease that is eating at the very foundation of our defense scheme. He would need to be a man who could see and meet trouble and then tell of it afterward, a man of resource who would have the nerve to demand an army of trackmen to be placed on a given road and to make the working and living conditions for those men such that they would be willing and anxious to do their part.

I know this sounds hysterical. It startled me when first I thought of it, but we have been used to sitting back in the shadow while someone else stood out in front in the spotlight and naturally think we must continue thus. Give us an entire year like the past two months and the railroads of this country will be running on the ties more often than on the rails. Men will not work for us at our wages and under our conditions, and our superiors will not or can not see where we are drifting.

Prometheus.

THE OVERLAP AS SEEN FROM THE FIRING LINE

Van Buren, Ark.

To the Editor of the Railway Age Gazette:

I have read with interest your article in the issue of August 10, discussing the merits and demerits of the overlap. This is very interesting reading, and it is refreshing to see so many vice-presidents speak their minds with freedom. Such evidence of a sincere desire on the part of these executives to arrive at a correct solution of such a vexatious operating problem, is, to say the least, an inspiration to the local officers; but in the last paragraph, the imaginary president of this imaginary meeting opines that there is nothing to be done about this matter. He surely meant to add "at this time." Quite likely he is right. It is not for me to dispute him, but what I should like to see would be some discussions of real facts and a continuation of the same until some actual information could be brought out. This being a vital matter, the discussion should be kept alive until a rational, and so far as it is possible, a uniform basis is reached, inasmuch as the blocking of trains is finally an integral part of the general scheme, pertaining to their operation.

I understand that the Pennsylvania Lines West of Pittsburgh operate hundreds of miles of line with automatic signals, where all trains are kept always *two blocks apart*. If this is so, what are the reasons for such a radical departure from ordinary practice? On the surface, it looks as though that road were getting about one-half as much out of its signaling investments as other roads. What reasons do the officers give for this? What do the officers of the Pennsylvania lines, east of Pittsburgh, think of this practice? What does the Government think of it?

These are questions that occur to the local officers, who are at the front, so to speak, in carrying out the details and in enforcing discipline and are therefore very naturally much interested, and discussions such as these tend to keep alive and even intensify their interest and are therefore certainly valuable. As I comprehend it, the problem under discussion is a fundamental one, which embraces the human equation. Human nature is the same everywhere, and we should, with all alacrity, find the fundamentals in the premises. We can not get anywhere with antinomies. We must be riveted generally to verities. Let us find the verity here and then engage assiduously in a campaign directed toward adjustment of the details in keeping with the fixed principle agreed upon.

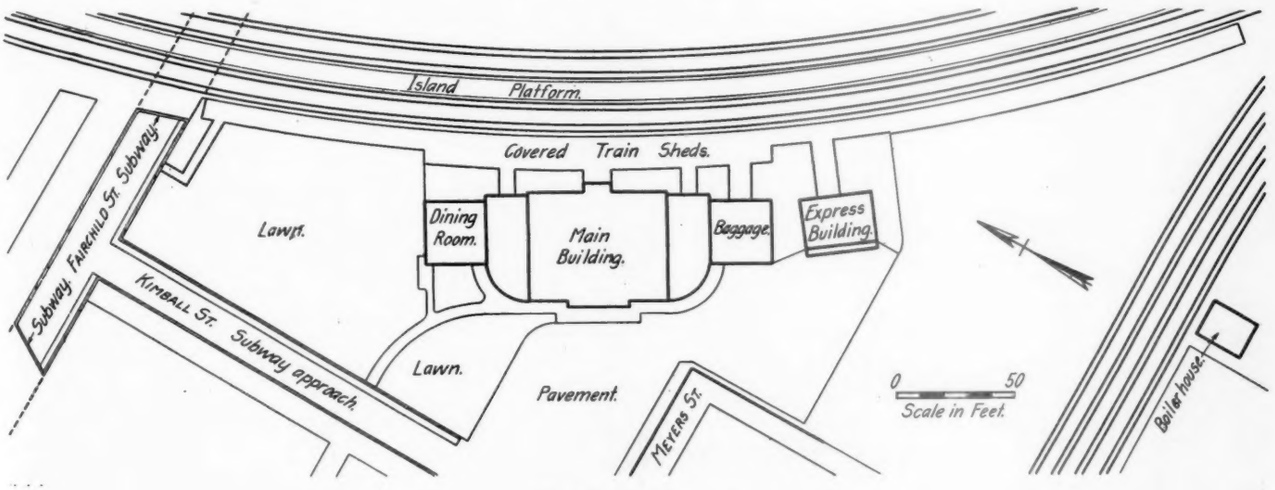
W. C. Morse,
Superintendent, Missouri Pacific.

A New Passenger Station at Danville, Ill.

The Chicago & Eastern Illinois Structure Presents a Pleasing Appearance and Embodies Novel Features

THE Chicago & Eastern Illinois has recently placed in service a new passenger station at Danville, Ill., which combines good architectural lines, convenience in operation and permanent construction. The structure also embodies a number of novel features that deserve special notice. In addition to the station building the project involved some track changes and a subway at Fairchild street, the total expenditure being about $300,000. The station handles an average of about 360 outgoing passengers daily, but the facilities provided are adequate for a much greater traffic. The present train service consists of 10 through trains and 2 local trains on the Chicago-Evansville main line and 4 trains on the Danville-Villa Grove line.

The station is served by three tracks, all of which are on a four-deg. curve. A fourth track on the far side of the layout is used for freight traffic. There are also four tracks along the south edge of the station grounds which are used as a coach yard, the outer track also being used to deliver coal to the station heating plant. The track in front of the station is served by a platform 995 ft. long. There is also an island platform 953 ft. long between the second and third tracks.



The Station Grounds

Pleasing Appearance

A main building 100 ft. by 78 ft. occupies the center of the layout, being flanked on one side by a baggage building and on the other by a dining room building. The side structures are separate from the central building, but are connected with it by roofs over the passageways between them. An express building similar in design to the baggage annex, but separated from it by a distance of 20 ft., occupies a position on the extreme south of the layout. Ample brick driveways are provided between the street and the main building and between the baggage and express buildings. There is a spacious lawn between the street and the station buildings and platforms.

The walls of the buildings are of a dark red, rough texture brick surmounted by a band or entablature of cream-colored terra cotta. This treatment is carried out with modifications in the covered passageways and the smaller buildings on either side, but an increased width gives it greater prominence in the central building, and it is emphasized still more over the main street entrance, which is located centrally in the middle of the street side. This entrance is also framed by a band of terra cotta extending to the floor line on each side and is divided into three openings by concrete columns. Further emphasis to this building entrance is afforded by a marquise with a wire glass roof which shelters the doorway, the three-step approach and the concrete carriage landing. The entrance is illuminated by a row of 11 8-in. spherical electric globes along the outer edge and by two ornamental lanterns surmounting pilasters on either side.

Secondary entrances to the station are afforded by the two covered passageways, each of which is embellished on the street side by a row of six concrete columns placed in a quarter circle curve.

Conveniently Arranged Interior

Entering the main doorway the passenger traverses a passageway 25 ft. long and 19 ft. wide, set off as a vestibule by two sets of doors. This passageway leads directly into the main waiting room, which is 53 ft. wide and 82 ft. long, entirely unobstructed by columns. The walls are wainscoted with vitrified brick in soft variegated colors to the springing line of the arched ceiling. The ceiling is finished in plaster, relieved by a beam effect. Ample illumination is provided. Four ornamental indirect hanging fixtures are suspended from the ceiling, while a continuous line of invisible electric lamps placed in a recess at the top of the brick wainscot afford additional indirect illumination. The floors are finished in a mosaic tile furnished by the National Mosaic Tile Company. At the right or south end of the waiting room are a station master's room, in which is also a Western Union Telegraph office, and a ticket office, separated by a vestibule leading across the covered passageway to the baggage building. At the left end of the room is a similar vestibule leading across the other passageway to the door of the restaurant building. The track or platform door is directly opposite the street door and has a vestibule projecting out onto the platform. In the space to the right of the street entrance vestibule, with a door communicating with the main

waiting room, is a men's smoking room and toilet room. In the corresponding position on the left side is the women's rest room and toilet room. These are finished similar to the main waiting room except that the brick work comes only to the normal wainscoting height instead of extending to the ceiling.

The dining room is finished in plaster with an enameled tile wainscot. Seating accommodations are provided for 24 at the lunch counter and for 36 at 9 tables. Special attention has been given to the installation of only the most sanitary furnishings. In addition to the dining room and kitchen the dining room building contains a basement for the storage of supplies, lockers for employees, etc.

One special feature of the station is the system of clocks, one being provided over the street entrance, one in the main waiting room and another in the restaurant. These are all controlled by a master clock in the station master's room, which is automatically regulated by Western Union Telegraph service.

View of the Station From the Street

Fire Resisting Construction

The building has been designed with a view to securing a high grade of fire-resisting construction. The walls are brick in all cases and the floors are either tile or concrete, the tile being placed on concrete. In the main building the roof is carried on a system of steel trusses covered with a reinforced concrete one-way tile slab. The ceiling consists of plaster on metal lath carried on 8-in. channels suspended from the trusses at 4-ft. centers. The pitched portion of the roof is covered with red Ludowici tile, the flat portion being protected by composition roofing. The roofs of the express, baggage and dining room buildings are composed of concrete-tile slabs, carried on I-beams, the latter structure having a metal lath ceiling suspended as in the main building. The express and dining room buildings have reinforced concrete floors, while the baggage room has a concrete floor on an earth fill. A portion of the space in the baggage room is given for a raised platform 3 ft. high, which is similarly paved with concrete on an earth fill retained by a concrete wall. The express building, in addition to raised platform on the inside, has a raised platform on the outside extending the full length of the building along the driveway.

Station Platforms and Sheds

The main station platform is protected by reinforced concrete butterfly sheds, 11 ft. wide, with the edges of the roof 12 ft. 8 in. above the base of rail and extending along the curved platform for a distance of 764 ft. Instead of attempting to cover the space between the standard sheds and the faces of the station buildings with a canopy, branch butterfly sheds are run from the main shed to the doorways of the main building, and to the baggage and express buildings and to the center of each of the covered passageways on either side of the main building. At the north end of the platform a branch of the shed extends down a stairway into the street subway. The portion of the train shed in front of the station involved considerable special work because of the branches to the various doorways, and was in consequence built in place. However, all sections of the shed that were of uniform design were built by the pre-cast method.

Looking South Along the Station Tracks

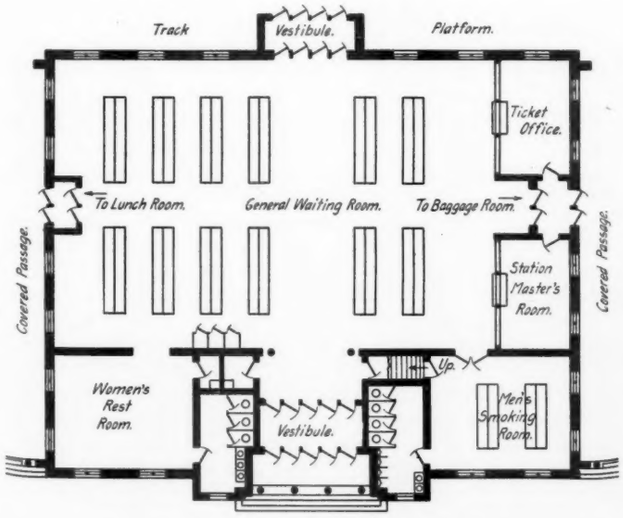
The roof consists of a slab 16 ft. long and 4½ in. thick, split at the center line of the shed. The columns, which are "T"-shaped, are 9 in. thick, the stem having a width of 18 in. at the bottom and 12 in. at the top. The base of the stem is secured to the footing pedestals by 4½-in. dowels. All of the pre-cast units were concreted in a yard located about two blocks from the station and were erected by a derrick car having a 35-ft. boom. A 3-in. stirrup was provided at each end of the slab to facilitate erection, and 1-in. dowels in the top of the column members held the slabs in place at each corner.

Interesting Subway Construction

In connection with the building of the new station a subway was constructed under the tracks at Fairchild street. The interesting feature of this structure is the type of retaining wall used in the approaches. Owing to the fact that the subway is in two sections with 225 ft. of uncovered depressed passageway between them and the necessity of providing an

The Restaurant

approach to Kimball street, on which the station faces, the building of this subway involved the construction of about one-half mile of retaining walls. To accomplish a material saving in these walls a special design was adopted which permitted a material reduction in the amount of concrete as well as in the excavation required. By providing a series

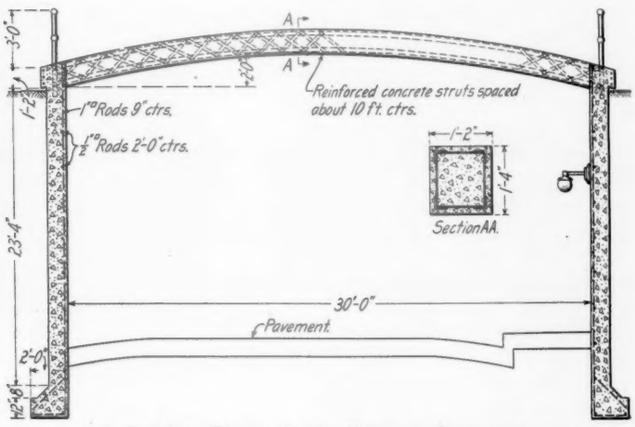


Floor Plan of the Main Building

of concrete struts spanning the roadway, which are designed to take the earth thrust exerted against the upper portions of the walls, it was possible to reduce the retaining wall section to that of a reinforced concrete slab one foot thick with a footing at the bottom two feet in width. These walls are reinforced on the inside face with one-inch square rods placed vertically nine inches center to center. The struts are 1 ft. 4 in. deep by 1 ft. wide, spaced about 10 ft. apart. For the sake of appearance they are crowned 2 ft. at the center. The reinforcing consists of four 3-in. by 3-in. angles, placed near the edges of the strut and connected by bar lacing.

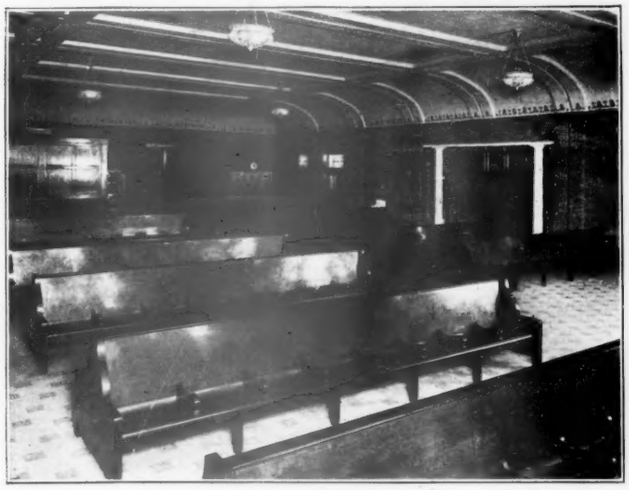
The covered portions of the subway under the track consist of three-centered arches of 34 ft. 8 in. span and 17 ft. 2 in. maximum clear height at the center line. One section of the covered subway has a length of 202 ft. and the other of 105½ ft. Grades of 6 per cent in the roadways were required for all three approaches, but stairways are provided at three points for the convenience of pedestrians. One of these leads to the station ground and another provides direct communication with the north end of the station platform.

Work on the station was started in the summer of 1916 and the station was placed in service in June, 1917. The design and construction of the station were under the general direction of L. C. Hartley, chief engineer of the Chicago &



A Section Through the Subway Approach

Eastern Illinois. Henry Raeder, of Chicago, was the architect for the station and also prepared the designs for the station grounds, the subway construction and the platform sheds, all the work being carried out under his general superintendence. The station and shed construction was under the immediate supervision of J. W. Hunter, division engineer for the railroad. The Clarke Construction Company of Danville, Ill., had the general contract for the station,



The Main Waiting Room

and the M. J. Hoffman Construction Company of Evansville, Ind., had the contract for the platform sheds. The subway was constructed under the immediate supervision of W. H. Martin, city engineer of Danville. The Carson-Payson Company of Danville had the general contract for the subway, the cost of which was borne by the railroad and the city.

WASHINGTON CORRESPONDENCE

WASHINGTON, D. C., August 28, 1917.

SHIPPERS CO-OPERATING ACTIVELY IN HEAVY LOADING CAMPAIGN

The Railroads' War Board, through the Commission on Car Service, is receiving most encouraging reports from all parts of the country indicating a nation-wide co-operation on the part of shippers in the campaign inaugurated by the railroads to bring about a more efficient use of existing freight cars, in order that they may be able the better to provide the increased amount of freight service made necessary by a war which has also made it difficult if not impossible for the railroads to considerably expand their existing facilities.

Reports have come to the board from railroads, shippers and shippers' associations showing that practically every commodity, from coal and steel to food products, is being loaded now in a way to eliminate the waste in freight car space and thereby increase the car capacity available to shippers.

During the month of July, it is estimated, the savings thus accomplished have been sufficient to represent the equivalent of an increase in the number of cars available for freight traffic by practically 120,000.

While the railroads deserve the credit for the initiative which inspired the movement for conservation of transportation by making one freight car do the work of two, because they foresaw its necessity and because they were in possession of the information which indicated to what an extent freight car capacity was being wasted, they are unhesitatingly giving full credit to the shippers, the government departments and to the Interstate Commerce Commission and some state commissions for the co-operation which is making the campaign effective. While railroad officers have been striving for years to do what they are just now beginning to accomplish on such a large scale that its results have become evident to all because they knew that the difficulty of increasing the minimum weights as provided in the tariffs has encouraged shippers in the habit of dealing in small carloads in spite of the steady increase in car capacity, they also realize that the gradually improving showing made during the past two or three months could not have been brought about by the railroads alone. They recognize that a most potent influence has been the new spirit of patriotism aroused by the war coupled with an understanding on the part of the shipping public that transportation capacity has become too scarce, relatively, to be wasted.

This, of course, is the answer to some of the misguided critics of the railroads that have asked "Why did they not do it before?" or who have described the efforts now being made by the roads and the shippers as "the mere exercise of ordinary business principles." The eastern roads have strongly emphasized their recognition of the fact that public co-operation and helpfulness are chiefly responsible for the remarkable record of increased transportation service, in the public notice they issued last week of their intention to compile a record of its results, and the War Board itself, in most of its public notices, does not fail to call attention to its appreciation of this co-operation.

Some conception of the efforts which the shippers are making to help the roads in their campaign to increase transportation efficiency and release cars that are essential to take care of the increased government and commercial traffic may be gleaned from the following facts taken from the reports sent to the Commission on Car Service from various parts of the country:

In New Orleans, sugar, which was formerly loaded to only 50 per cent of the capacity of the cars, is now being loaded from 100 to 113 per cent of marked capacity.

The loading of coffee has also increased in the New Orleans district from 50 per cent of the full capacity of the cars to as high as 86 per cent.

At Libby, Montana, a lumber company which in July, 1916, loaded on an average 22,268 ft. of lumber per car, in July this year increased the average loading to 26,383 ft., an increase of more than 15 per cent per car.

A rubber company in the middle west which averaged 16,000 lb. of tires to the car before the campaign for intensive loading began, is now loading 32,000 lb. of tires to the car.

A salt company in Kansas is now loading cars to 110 per cent of their marked capacity, an increase of more than 20 per cent over its performance last year.

An iron company in New York state that formerly loaded pig iron to 90 per cent of the marked capacity of its cars increased its loading to 107.2 per cent during the period July 15 to July 31 inclusive.

A recent check of bituminous coal on one of the eastern roads showed that out of 540 cars only 7 contained lading below the marked capacity of the cars. The total marked capacity of these cars was 27,593 net tons. The weight of the lading per car was 30,667 tons, or a loading of 111.14 per cent of the marked capacity.

In addition to co-operating by intensive loading, a number of shippers and manufacturers' associations have voluntarily agreed to the abolishment of reconsignment and diversion of cars in transit. An example for this action was set by the West Coast Lumbermen's Association on August 14, when it passed resolutions recommending that each and every common carrier in the United States be authorized by the Commission on Car Service to place embargoes against the diversion or reconsignment of all freight, except in cases where it can be satisfactorily shown that the additional haul is made necessary by the insolvency of the consignee or a bona fide refusal of the original consignee to accept the shipment.

* * *

POSSIBILITY OF REDUCTION IN ACCOUNTING REQUIREMENTS

The Committee on Corporate, Fiscal and General Accounts of the Association of American Railway Accounting Officers, which was requested by the Railroads' War Board to investigate the possibility of trying to bring about a reduction in the requirements of commissions and governmental authorities as to accounting and statistical reports during the period of the war, has considered the question and submitted a report. It was decided to forward copies of the report to the chairman of the Interstate Commerce Commission and to the president of the National Association of Railway Commissioners for their consideration, with a suggestion that they each appoint committees to meet with the committee of railroad accounting officers and report whether something can be accomplished along this line. The report will be called to the attention also of the Division of Valuation of the Interstate Commerce Commission.

WEIGHING BRITISH PASSENGER TRAINS—During the last three years there have been Board of Trade reports on accidents issued which go to show that the London & North-Western, Midland, Caledonian and North British companies now calculate the weight of their passenger trains by the actual weight of the coaches, and that the Great Western and the Great Northern by the number of wheels. Other companies may, of course, have followed either of these examples, but there has been no report issued that has revealed any such change. The former method, and that still in force on the minor lines, is to count the weight by the number of vehicles, a four-wheeled coach being reckoned as one, a six-wheeled coach as one and a half, and a bogie vehicle as two. Where the weights are used the weight is to be found on the buffer beam.—*The Engineer*, London.

The Film and the American Railroad

Interesting Review of the Extensive Use Made of the "Movies" for Advertising, Instruction and Entertainment

By T. T. Maxey
Advertising Agent, Burlington Route, Chicago.

THE introduction of the term "moving picture" into the language of our everyday life a few years ago, gave the advertising agents of the big railroad systems a distinct thrill in a new place. "Moving picture" had a welcome sound, and they were not slow to sense its seemingly too-good-to-be-true possibilities. The advent of the moving picture film, provided it proved to be practical, offered a new field for the exploitation of the wares which a railroad has to sell so broad that it was almost entirely beyond conception.

Seeing is believing and actions speak louder than words. Therefore, to be able to photograph, in motion, the wondrous, varied and numerous beauty spots of America, so as to show the life that is there, and parade these pictures before the eyes of the world, would certainly awaken the public to a realization of the value, pleasure and benefit of traveling around a bit and getting acquainted with America, in a way never before possible and hardly dreamed of. Such direct and visual advertising was bound to "strike home" and give the public a desire to climb aboard the limited and go and see the real thing. It likewise meant the pulling away of any artificial props in the mind of the skeptic that the wonders of your scenery, or the benefits of your resort, were far over-estimated in your literature and only partly existed in reality.

The rapid development and perfection of the moving picture camera to a point where it occupies a front seat among the mediums in the publicity band wagon, have been among the wonders of modern times. Hand in hand with this came increased attention from the passenger traffic officers. They, too, began to believe there was something to "the movies" and the dreams of the advertising agents relating thereto; but it was only after their customary thorough investigation to ascertain that there was no Senegambian in the wood pile, that some of them became convinced that the film was entitled to consideration in connection with their advertising plans.

It is only by recounting a few of the many exploits along this line by the principal railroads that one can form an adequate idea of the extent to which the railroads have become users of films in connection with the exploitation of their wares.

Generally speaking, these films may be divided into four grand divisions—scenic, industrial, safety first and educational.

It is but fitting and proper that Yellowstone, the oldest and largest of our national parks, should have been filmed first. As near as can be determined from the records of the writer this actually took place. The antics of Old Faithful, the world's most famous geyser, the beauties of the Grand Canyon of the Yellowstone river and the great falls at the upper end of it, and the attractiveness and comforts of Old Faithful Inn, were successfully filmed for the Northern Pacific. The wide circulation of this film, through the company's lecture bureau and otherwise, has aroused the interest of tourists and travelers in the wonders of Wonderland by disclosing them in a manner not possible by still photographs or mere word description.

The heavy snow-fall of winter before last drove most of the wild animals (especially the deer, antelope, elk, mountain goats and Rocky Mountain sheep) resident in the Yellowstone region down into the Gardiner basin for food and shelter. This presented an opportunity to secure a film of animal life at close range, the like of which might never again be obtainable in this country. The Northern Pacific was not slow to take advantage of the opportunity and secured what is beyond question the best film of this nature ever taken. The animals were protected by the government and given generous rations of alfalfa.

The Santa Fe was also one of the first railroads to try out the film in advertising. Its first film was used in the windows of its Pacific coast offices at night. Thousands of passersby stopped to see the wonders of the Grand Canyon of the Colorado river as the film reeled them off. The results encouraged the Santa Fe to continue this line of advertising endeavor until it now has completed films of the principal scenic features along its lines.

The Pennsylvania Railroad recognized the value of the film in advertising by making it a unique feature of its wonderful exhibit at the Panama Pacific Exposition at San Francisco. In a theatre which was constructed of two standard all-steel coaches, the Pennsylvania treated visitors to a moving-picture journey over the principal lines of the system, which presented an instructive panorama of the country through which the Pennsylvania runs.

Any one who visited the Washington State Building at the Panama Pacific Exposition and was fortunate enough to see the film which showed a spectacular race between a number of automobiles and a train enroute from Tacoma to Ashford, the entrance to Mount Rainier National Park, shown by the Chicago, Milwaukee & St. Paul, could hardly doubt the value of such publicity or escape having deeply implanted in his mind an intense desire to go tobogganing down the old mountain and pick some of the gorgeously-hued wild flowers which blanket this sky-piercing cone below the snow line.

If a prize were offered for the place which has been filmed the greatest number of times, Glacier National Park would probably win in a walk. The rapid exploitation by the Great Northern of the greatness and strikingness of the sawtooth-like Alpine mountain scenery in this vacation paradise has attracted the attention of artists, painters, photographers and moving-picture producers alike from all sections of the world. The Blackfeet Indians likewise presented material for films of which the public would never tire. Their life in their native haunts, their picturesque raiment, the numerous and grotesque ceremonies of Not-Go-Out, Heavy Breast, Buffalo Body, Many Tail Feathers and others of the tribe, have delighted many Americans—both young and old. Those who saw the Lyman Howe travelogue for the 1915-1916 season will at once recall the wonderful pictures of Glacier Park and the Indians. A large amount of newspaper publicity, which could hardly have been purchased at any price, directly resulted therefrom. The Great Northern has also used films extensively, in connection with its lecture bureau, with telling effect.

The Union Pacific system, in connection with its lecture bureau, has also made considerable use of the film in exploiting the scenery in the west and along the Pacific coast.

The Southern Pacific has some splendid films picturing the beauties of the Yosemite valley and other sections of California.

The little one-day journey from Denver, which has be-

come familiarly known to so many tourists as "The Georgetown Loop and Mt. McClellan Trip," via the Colorado & Southern and Argentine & Gray's Peak Railways, was filmed this past summer.

The Denver & Rio Grande has likewise had the beauties of the world-renowned Royal Gorge recorded in film, as well as the wonderful archaeological remains in Mesa Verde National Park.

Some of the Canadian lines, particularly the Canadian Pacific, have produced considerable film. This road has filmed the beauties of the Canadian Rockies, Nova Scotia (Evangeline Land), and the winter sports of Quebec; and has also taken some film in Alaska.

The Burlington had the principal features of its various main lines covered by "movie" camera men last summer, and it plans to create a nation-wide desire to go and see the real wonders which these films portray. Experts have pronounced these to be the finest scenic films yet produced. In these films the Burlington has largely forsaken the old style, or black-and-white, film and enhanced both their beauty and attention value by the use of tints and tones—sepia, green, blue, yellow, pink—each section carrying that particular tone or tint which more nearly portrays the natural beauty of the subject. Several very attractive novelties in the way of titles have also been worked out.

The ceremonial exercises at the Fortieth Anniversary of the Custer Battlefield was the subject of the Burlington's first scenic film. This was followed by films of the Cody Road in Yellowstone Park; Rocky Mountain National-Estes Park, Colorado; Thermopolis Hot Springs, Wyoming; Central Wyoming, covering the new joint Burlington-Colorado & Southern Line between Billings, Montana and Denver, including the gigantic canyon of the Wind River, the great oil industry near Casper and the great cattle and sheep industries which center around Douglas; and the Vacation Ranch Resorts in the Big Horn Mountains of Wyoming, showing where men who do big things go to "let down" and become boys again for a time.

No doubt other roads have also produced films of various scenic regions and subjects of which the writer has no immediate knowledge.

Most of the above-referred-to roads have also used films more or less extensively in connection with the exploitation of their industrial, immigration or colonization work.

The Great Northern has films showing the Wenatchee Valley fruit industry and various other agricultural regions in "The Zone of Plenty." That the farmer-student amasses a sufficient fortune to become independent in a remarkably short time is so apparent to those who see these films that a strong urge to investigate is thereby aroused.

The Northern Pacific has films intended to convey in a forceful manner the great opportunities in "The Land of Fortune" that beckon the city-tired man who wants to better his condition.

The Soo Line has used so-called industrial or agricultural films quite extensively. Its films vividly portray the resources and opportunities existing along that line in North Dakota. The Soo has met with such success in this work that additional films have been taken recently.

The Canadian Pacific has films showing the asbestos industry of Quebec, the elevators and other facilities at Ft. William, the great grain shipping port at the head of the Great Lakes, and the lumbering and fishing industries in New Brunswick.

The Burlington uses a film titled "The Romance of Irrigation," which illustrates how a school teacher in the east who became dissatisfied, wrote to the U. S. Reclamation Service at Washington, D. C., and secured information which led her to take up an irrigated homestead on the Shoshone Project near Powell, Wyoming, and how she "made good." The Burlington also has a film which shows strikingly how two farmers from the east, who had the nerve to back up their good judgment and buy raw $10-an-acre prairie land in Northeastern Colorado a very few years ago, raised abundant crops, surrounded themselves with comforts which many city-men cannot afford to enjoy and became "well to do" in a remarkably short time.

A number of "safety first" films have made their appearance. The film which leads the procession in this line, is that entitled "The House That Jack Built," produced under the direction of M. A. Dow, general safety agent of the New York Central Lines. This well acted, effectively staged and very convincing photo play provides a most effective channel through which to convey lessons in safety to employees. Every scene in the film is true to life. It points out in an unmistakable manner the far reaching and unhappy effects of carelessness and the many sad and unfortunate accidents which have been the result thereof. "Steve Hill's Awakening," is the title of another safety first film produced by this road. The Burlington and many other roads have circulated copies of this film with beneficial results.

The Rock Island has also produced films showing views of men doing dangerous work and illustrating the right and wrong way of doing such work. It is needless to say that the circulation of such film has been instrumental in greatly reducing the number of accidents to employees.

The Chicago Railways Company (Surface Lines) have also produced some safety first films, for the education of the public as well as their employees. These films show the proper and improper way of getting aboard and alighting from a car; the dangers of permitting children to play on the car tracks, and other features which have a bearing on the operation of their cars in the streets of Chicago. These films have been widely circulated in churches, schools, etc., with splendid results.

When the Milwaukee's Puget Sound extension was being pushed through the Rockies and the Cascades some heavy construction, requiring unusual engineering skill, was encountered. In order that the public might form some conception of the almost insurmountable obstacles that are found in the path of a trans-continental railroad, the road filmed some of the most remarkable features of this work, which, with the scenery that naturally found its way into the picture, made a most favorable impression on its audiences.

The Burlington has also produced two out-of-the-ordinary films of an educational nature. One shows how this road helps to conserve the national timber supply and makes one tie do the work of four—being a trip through its immense timber preservation plant at Galesburg, Ill. One cannot view this film without getting aboard the idea of what happens to a tie there and why. The other film is the story of "How the Mississippi River was Harnessed by Man, at Keokuk." It shows the huge hydro-electric development of the Mississippi River Power Company—the ultimate capacity of which is to be 300,000 h. p.; it takes one out on to the gigantic dam which is said to contain sufficient concrete to build a sidewalk three feet wide and 1,500 miles long, and through the power house where approximately 8,000,000 lb. of machinery revolve once a minute; it shows how boats are put through a lock which has a lift higher than those in the Panama Canal, and how the entire plant, which cost about $26,000,000, is operated—the natural inference being that the ample supply of cheap electrical power available in this region will force an industrial development of unusual importance and that countless opportunities will follow in its wake.

An over-dose of films that were neither pleasant, instructive or entertaining has brought about a demand for a different, better class of films from the majority of moving picture theatre patrons. The impetus of the "See America First" movement has had its effect. Many of these better-

class travel films will find their way into the best of moving picture houses, and receive a hearty welcome from the audiences because of their beauty, educational value and pleasant entertainment. There is also a great and continuously increasing demand for films from Y. M. C. A.'s, universities, schools, clubs and churches. Seven hundred and fifty-nine out of the 2,583 Y. M. C. A. buildings in the United States are now equipped with standard moving picture machines. Such apparatus is also fast becoming a part of the regular equipment of school buildings everywhere. In fact, the channels through which circulation for good films may be obtained are many and varied. To cite a concrete example of how far reaching they really are, however, let me say that it is estimated that one-tenth of the entire population of the United States will have had an opportunity to see the Burlington films before their circulation shall have been completed.

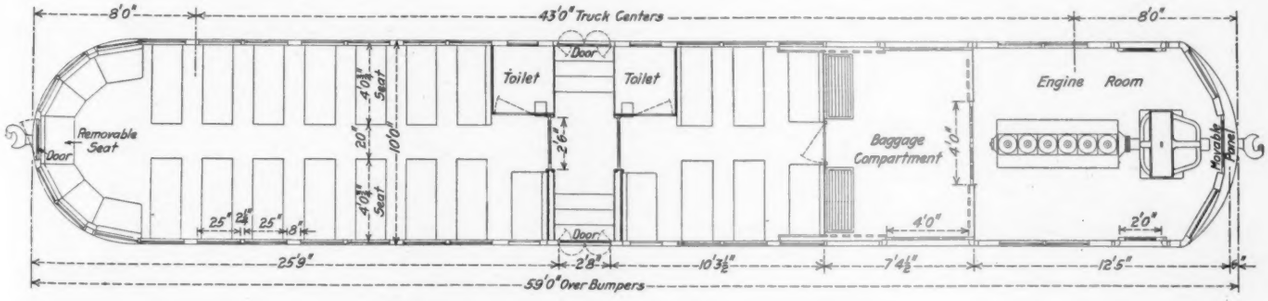
So much for what the film has done for the railroad. This article would not be complete, however, without some mention of the prominent part which the railroad has played in the production of modern "movie" dramas. In a large percentage of the films you see, there is a train or track or station scene—something to remind you of the railroad. The studios of many of the largest film-producing companies are located in Southern California along the lines of the Santa Fe, Southern Pacific and Salt Lake Route. Signal, a station on the latter road, for instance, is used almost exclusively by motion-picture people. "Get the proper effect—cost be hanged," must be the working motto of the directors; and special passenger and freight trains are frequently chartered in order to do this. The well known railroad photoplays "Whispering Smith," "The Lass of the Lumberlands," "The Girl and the Game" and "The Railroad Raiders" now running, are excellent examples of this. The Salt Lake Route's passenger locomotive No. 3708, which was shown with so much pride at the San Francisco exposition, has been used so frequently in the production of films that it has become almost a "prop" of the motion picture directors.

OIL-ELECTRIC MOTOR CAR

A new type of self-propelled car which is operated by a 150-hp. oil engine connected to a generator in connection with a storage battery having a rated capacity of 438 ampere hours at the five-hour rate, has been built for the Nashville, Chattanooga & St. Louis by the Electric Car & Locomotive Corporation, 165 Broadway, New York City. This car is the most powerful self-propelled car yet constructed, and with the combination of the generator and storage battery a large reserve of power for peak loads is obtained. The car was invented by Ralph H. Beach, and it is designed to take the place of steam train service on branch lines and small railways where such service is unprofitable. It is claimed that this car will operate at from one-third to one-fifth of the present cost of steam operation. From tests it has been found that the car will run 2½ miles per gallon of kerosene oil, and 50 miles per gallon of lubricating oil. Its rated speed is 45 m.p.h., and the rated acceleration is .8 m.p.h. per second. Its service is, therefore, not limited to branch line service, but it could be used to advantage in high speed interurban work and between divisional points on railways. This car is to be used between Nashville and Lebanon, Tenn., a distance of 32 miles. On this run there is a short grade of 2.25 per cent and a grade a mile long of 1.7 per cent. Three round trips will be made per day with the car.

View of Passenger Compartment of the Oil-Electric Car

The power plant in the car is of particular interest. A standard four-cycle, eight-cylinder, 150-hp. oil engine of the marine type is direct-connected to a 100-k.w. differential compound wound, 250-volt d.c. generator, running at a constant speed of 1,000 r.p.m. This engine will burn either kerosene or fuel oil, and is so arranged that no carburetors are necessary. The oil is fed to the cylinders in a gassified state. From the storage tank the oil passes to a gas generator, which converts the liquid fuel into a permanent fixed gas. This generator is located in the muffler of the exhaust, thus absorbing the waste heat from this source for gassifying the oil. From the generator the gas passes directly to the engine cylinders, being mixed with air in the proportion of one part of gas to six parts of air where the kerosene is used. This mixture burns in the cylinders without smoke or any carbon deposit on the walls of the cylinders. The gas generator has no moving parts and no deposits of



Floor Plan of the Beach Oil-Electric Motor Car

carbon, tar or by-products of the oil are found to remain in the generator.

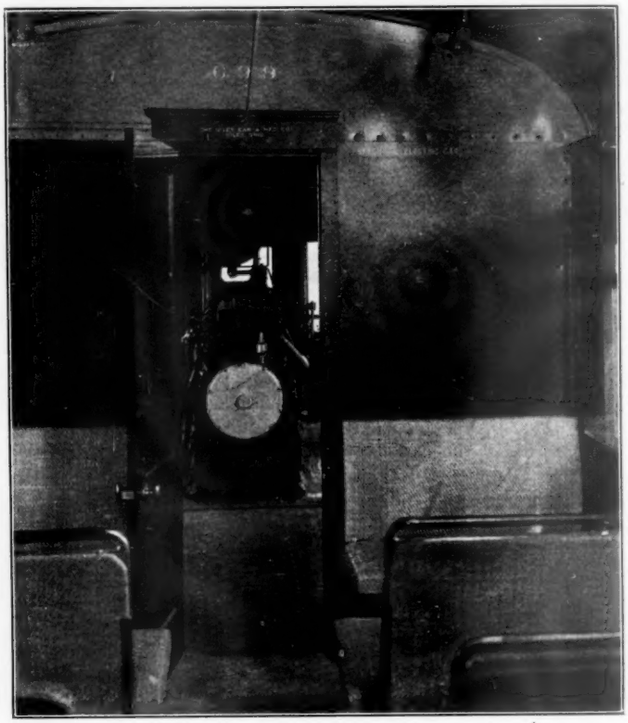
The storage battery is suspended underneath the car body and operates in parallel with the generator. It is characteristic of a storage battery that as the load increases the voltage declines and as the load declines the voltage rises.

The generator is so constructed that it will automatically coincide as to voltage with the battery. In a generating plant constructed in this manner, the generator will deliver current up to its capacity, and at the same time will work in unison with a storage battery, which by itself will supply any excess of current that the load may require. This battery is capable of delivering 400 hp. for 5 minutes, 210 hp. for 15 minutes, 93 hp. for one hour and 30 hp. for 5 hours. This power in addition to the 150 hp. developed by the generator gives the car abundant amount of power for acceleration and for use in working over heavy grades.

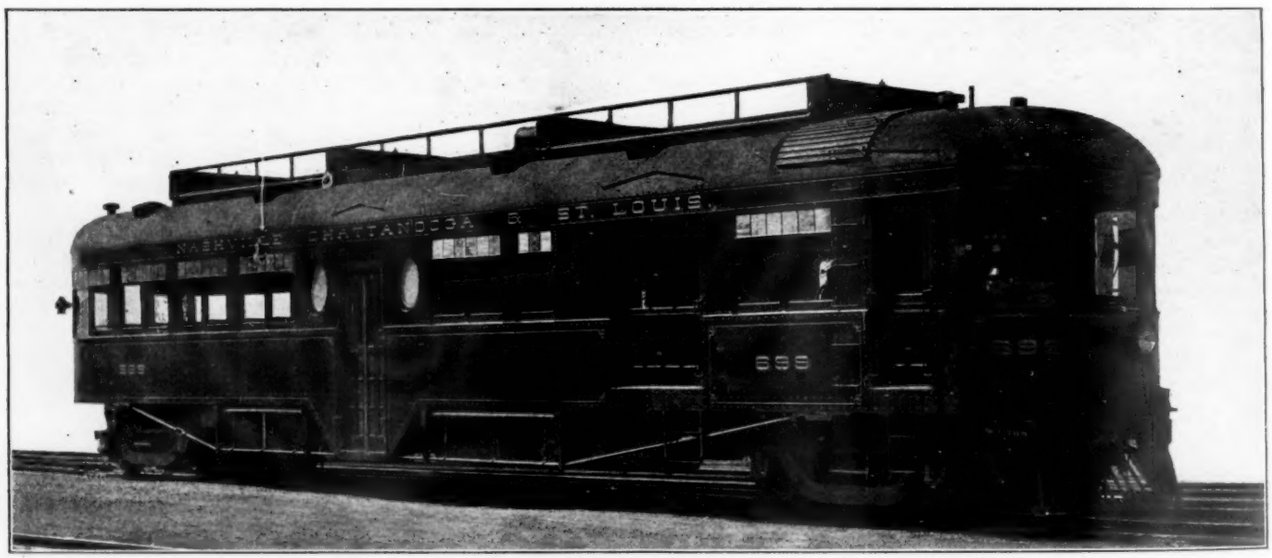
With this arrangement the engine works at nearly full load constantly, therefore getting its maximum efficiency. All power required above the capacity of the engine is furnished by the battery, and all power generated by the engine, not required to drive the car, charges the battery. The battery furnishes convenient source of energy for starting the engine, lighting the car and driving the auxiliary apparatus. It also furnishes a complete and separate source of energy in case of failure of the engine to perform its work, having sufficient capacity to operate the car about 35 miles.

The body of the car is made of steel with the exception of the interior finish, sash and doors, which are mahogany. The car weighs 113,000 lb., is 59 ft. long and is divided into four compartments, as follows: Engine room 12 ft. 5 in. long; baggage room 5 ft. 5 in. long; smoking compartment 10 feet; main passenger compartment 25 ft. 6 in. The entrance to the car is between main passenger and smoking compartments. It is provided with folding doors and a trap door to cover the steps when the door is shut. In addition to the side entrances there is an emergency exit at the end of the car, a sliding door with a drop window at each side of the engine room and 4 ft. sliding doors in the baggage compartment. The car has a total seating capacity of 75 people, the baggage room being provided with folding seats for four persons, the smoking compartment has a capacity of 18 persons and the main passenger compartment has a seating capacity of 53 persons. Each passenger compartment is fitted with a lavatory, basket racks, Pantasote curtains, incandescent lights and stationary seats. The car is fitted with an M.C.B. drawbar and incandescent headlight. It is heated with hot water from the engine, which is by-passed when it is not wanted.

The car is provided with two four-wheel trucks made by the Baldwin Locomotive Works, of the equalized high speed type. The trucks have a 7 ft. 3 in. wheel base and are provided with 33-in. M.C.B. rolled steel wheels. The journals are 5 in. by 9 in. The type of control used on this car is the standard Westinghouse H. L. series parallel type, used for single or train operation. Four standard 250-volt box frame railway motors, having a horsepower of 75 each, are



Front End of the Oil-Electric Car



Beach Oil-Electric Motor Car

mounted one on each axle. They are inside hung and are equipped with standard gears and cases. The Westinghouse straight and automatic air brakes for single and trailer operation are used, as well as the hand brake. Multiple tube type radiators mounted on the roof with forced circulation are used to cool the water from the oil engine. There are two oil tanks having a capacity of 140 gallons each. Air operated whistles, single gong and sanders are furnished with the car.

The following are the estimated figures for the cost of operating this car. The amount, of course, will vary with the service required and upon the scheduled speed, distance between stops, grades, etc. These figures, however, are prepared covering average conditions.

	Per Mile
Wages	$0.0745
Fuel and lubrication	0.0400
Repairs and supplies	0.0350
Depreciation	0.0385
Total cost	$0.1880

THE TRAGEDY OF THE EMPTY CAR

By J. L. Payne

Comptroller of Statistics, Department of Railways and Canals of Canada.

The empty car attaches to the tragic side of railway operation. It is the obscure burden which every railway is compelled to bear without compensating consideration from any quarter. A callous public looks on with indifference. In fact, the casual critic of railway administration takes no account whatever of the empty car. He fancies that cars are always loaded when in transit, and loaded at highly profitable rates. Yet the empty car is ubiquitous, chokes terminals, blocks sidings and in a very large and comprehensive sense is the despair of the operating department. It intrudes very conspicuously into operating cost.

Biologists talk about the malignant part played in the human body by the so-called vagrant cell. The empty car is the railway analogue. It plays a double role, and in both parts finds a place in the adverse column. It gives trouble when it is tucked away in the yard and classified in the car association accounts as "surplus"; and it is no less an undesirable when in motion. In both cases it is directly unproductive. It cannot be got rid of by any sagacity on the part of the superintendent. It is both unavoidable and inevitable.

In a moment of inquisitiveness I undertook to investigate the life history of the empty car. This led to depressing discoveries. For my purposes I selected the experience of the Canadian Pacific Railway, for three reasons: First, because the records were immediately under my hand; second, because this is a large railway, probably the largest system in the world; and third, because the Canadian Pacific is an exceedingly well-administered road, prosperous in an exceptional degree, and therefore represents what might be regarded as favorable conditions. That is to say, the degree to which the Canadian Pacific finds the empty car a problem and a costly care might safely be taken as applying with equal force to every other large railway.

Here is a little table compiled from C. P. R. reports which tells its own sad story.

	Mileage of loaded cars.	Mileage of empty cars.
1907	338,742,798	101,363,491
1908	319,507,176	110,373,337
1909	354,798,284	106,472,294
1910	433,498,575	118,134,609
1911	460,739,921	139,455,186
1912	556,244,798	140,210,180
1913	581,397,285	165,627,992
1914	526,194,125	169,768,349
1915	404,249,594	144,408,527
1916	603,705,406	280,241,711

My first thought was to discover, if I could, some more or less constant law governing the proportion of empty cars to loaded cars. I couldn't find it. The volume of traffic, for example, did not afford a clue. The facts were as follows:

	Tons of freight.	Percentage of empty car mileage.
1907	14,910,429	23.0
1908	14,232,306	25.7
1909	15,701,281	23.1
1910	20,551,368	21.4
1911	22,536,214	23.2
1912	25,940,238	20.1
1913	29,471,814	22.2
1914	27,801,217	24.4
1915	21,490,596	26.3
1916	29,276,872	31.7

Obviously the tonnage of traffic requiring to be moved did not have a direct bearing on the percentage of empty car mileage to total freight car mileage. For example, in 1911 the percentage was 23.2. In 1912 the movement of freight was on a larger scale, and yet in that year the percentage declined to 20.1. A glance at the figures for 1914 and 1915 will show the absolute reverse. But I found that there was revealed in the ten-year period a distinct tendency on the part of the percentages to rise. The two highest figures are found at the foot of the table. Moreover, while the average was 23.2 for the first five years, it was 24.9 for the second period.

My second suspicion was that this growth of the empty car ratio might be due to weakness in the trainload or carload. Again I was disappointed. The upward movement had taken place in spite of quite remarkable betterments in the average number of tons per train mile and the average number of tons per car mile. For example, the C. P. R. trainload was 303 tons in 1907, moved up to 372 tons in 1912, and reached the maximum of 503 tons in 1916. For the same three years the average carload was 17.13, 18.30 and 22.90 tons, respectively. Thus the capricious empty car refused to be answerable to any law that I could find.

I turned to the records of the Grand Trunk to see whether or not, by comparison with the Canadian Pacific, there could be found any facts which would suggest a curve common to both roads, even to the extent of time. It was my notion that perhaps certain years had developed an abnormal freight movement either eastward or westward which would be reflected in a higher proportion of empty cars on both railways at the same time. Once more I was baffled; for it transpired that there were years when one went up and the other went down. The Canadian Pacific had a variation all the way between 20.1 and 31.1 per cent; whereas the Grand Trunk figures ran between 25.9 and 32.9. The average for the Grand Trunk was 28.3 for the first five years, and 29.3 for the second five, showing that the Grand Trunk is more acutely affected by the empty car trouble than is the Canadian Pacific. The extreme fluctuation in the case of the Canadian Pacific during the ten years was 11.5 points, while in the case of the Grand Trunk it was 7 points. The two roads were alike only in showing an ascending scale; but the ups and downs in neither case followed the changing volume of freight movement.

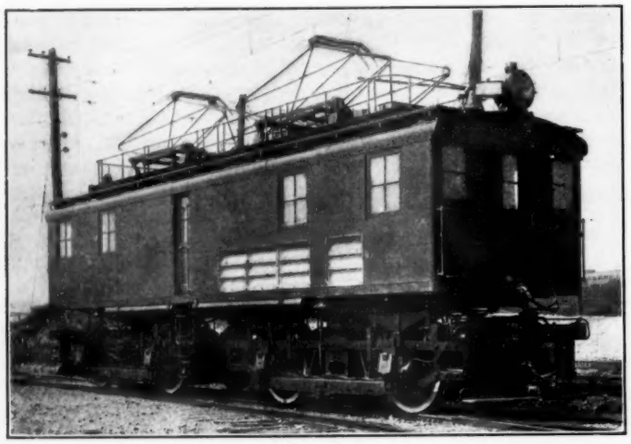
It occurred to me that the distribution of cars over a long system might account in some degree for the high percentage of empty cars; but once more I landed in a blind alley. The Canadian Pacific had an average haul per ton of 472.13 in 1916, while the Grand Trunk average was but 197.72. If length of line were suspected of being a controlling factor in the matter, then it would follow that the Canadian Pacific would show a high ratio while the Grand Trunk would be relatively low. The facts all leaned the other way. On the whole, the Grand Trunk was a greater sufferer than was the Canadian Pacific. The empty car positively refused to give up the secret of its rise and progress.

The practical aspects of this matter go right down into the vitals of railway life. Most of them are obvious. It

would appal the outsider, especially the layman who can show anybody that freight rates are unreasonably high, to know that in every 100 cars moved over any big line of railway from 20 to 32 of them, according to conditions, are empty. I do not know what it costs to haul an empty car—nobody does—but the effect on operating expenses, I take it, is nearly the same as in the case of a loaded car. Since all the operations of a railway focus themselves in the running of trains, and the freight car is the basic unit of a freight train, it follows quite logically that the undemonstrative empty car—which is entirely omitted from the calculations of the average critic—really absorbs a tremendous proportion of the earnings of the loaded car. In other words, if it were not for the care demanded by the ever-present empty car freight rates could be materially lowered without affecting net results.

ELECTRIFICATION IN SOUTH AMERICA

The Bethlehem Chile Iron Mines Company is about to put into operation its electrified railroad, which is 15 miles in length, extending from the port of Cruz Grande, Chile (about 300 miles north of Valparaiso) to the mining village located about 4 miles inland at Tofo. The iron mine at this point is located about 2,200 ft. above sea level and consists of two hills of iron ore, which is removed somewhat after the manner of trap rock quarrying. It should be noted that, while the mines are only four miles inland, the railroad is 15 miles long; the circuitous route was necessary in order to limit the grades. The railroad is constructed in four loops and the grade is thus restricted to a maximum of 3 per cent which is 14 miles long. The loaded car movement is, of course, down the grade. The railroad is a single-track, standard gage line. The trains will consist of an electric



Electric Locomotive for a South American Industrial Line

locomotive and from twelve to twenty 50-ton ore cars. The motive power consists of three d. c. electric locomotives which take power from a 2,400-volt catenary trolley supported on concrete poles on the main line and from a 1,200-volt third-rail at the docks. The complete locomotive unit weighs 120 tons and is equipped with four GE-253, 1,500-3,000 volt motors having a normal one-hour rating of 240 hp. each on 2,400 volts. The locomotives are geared for a speed at a rated load of 12.2 m.p.h. and are capable of exerting a tractive effort of 42,000 lb. at the one-hour rating.

In order to provide for suitable control on heavy down grade work, the locomotives are provided with regenerative braking equipment similar to that used on the Chicago, Milwaukee & St. Paul electric locomotives. The trains will descend at about 12 m.p.h., at which speed with a trailing load of 1,500 tons the locomotive will return approximately 1,000 kw. to the line. The schedule will be so arranged that the empty train going up will take power from a loaded train coming down the hill. Excess power will be absorbed by switching operations at the mines and docks. The air brake equipment on these locomotives provides for either straight or automatic operation. The cars are provided with empty and load brakes.

A power plant has been installed capable of furnishing sufficient power for mining and transporting 5,000 tons of ore per day with provision for sufficient additional equipment to double the capacity. The present equipment consists of two 3,500-kw. Curtis steam turbines generating three-phase 60-cycle alternating current, and one 300-kw. 60-cycle turbine for lighting and small power service.

The railway substation equipment is located in the power house and consists of two 1,000-kw. 2,400-volt direct-current units operating directly from the 2,300-volt a. c. busses. On account of the circuitous route, a considerable saving in feeder copper is effected since a portion of the feeder takes a direct route from the mines to the docks.

At Cruz Grande there is a steam dock equipped with three tracks for delivering the ore to the boats and to the steel bins. On account of the traveling gantry crane which extends over these tracks, it was considered advisable to feed the locomotives on this section of the road from a 1,200-volt third rail. Power is supplied from either of the 1,200-volt generators of the 2,400-volt motor-generator set in the power house.

ECONOMICAL TONNAGE RATING FOR WAY FREIGHT TRAINS

By F. W. Green

The successful operation of a division depends largely upon the efficient handling of way freight services. The flow of local traffic, especially in those parts of the country where natural resources are but incompletely developed, is constantly changing both in magnitude and direction. A wise superintendent will, therefore, keep a watchful eye on the local service and adapt it to changed conditions. The re-arrangement of merchandise loading schedules at important stations from time to time frequently offers opportunity for large economies.

No hard and fast rule may be laid down as to what tonnage rating is most economical for way freight trains. A large number of variables enter into a consideration of the problem, among which are:

a. Length of the district.
b. Traffic density—i.e. number of trains to be met and passed.
c. Time lost because of station switching.
d. Time consumed in loading and unloading l. c. l. freight.
e. Maximum speed permissible between stations.
f. Character and quality of fuel burned.
g. Physical characteristics—grades, rise and fall, etc.
h. Traffic characteristics—number of loads to be picked up and set out.

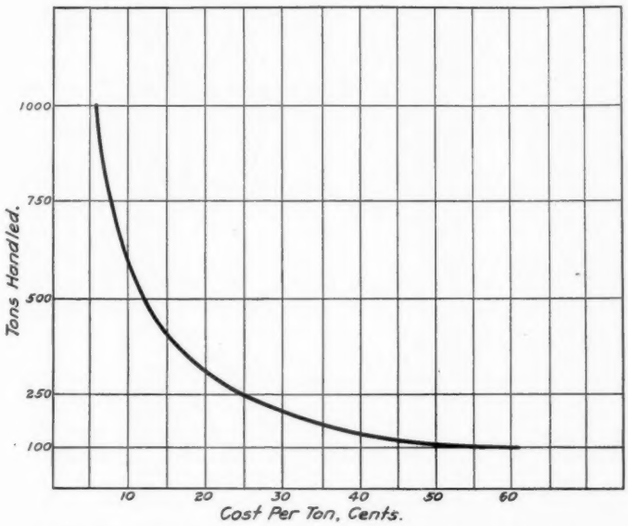
When the district is so long as to preclude the handling of anything except way freight tonnage within reasonable hours of service for the crew, the rating should be that which will permit the crew to be released at the final terminal without exceeding what is considered the maximum economical time for the crew to be on duty.

As a general rule, but to which there are always to be found just grounds for exception, it is better economy to shorten local districts than to reduce tonnage ratings. Train miles are paid out in exchange for ton miles. The lighter the rating the fewer ton miles per train mile, and consequently the higher the operating cost per ton mile. It will

never be possible to handle tonnage in way freight trains for as low a cost as when handled in through freight trains, because of the wage differentials and the additional fuel and other items required to accelerate and retard way freight trains because of the additional stops as compared with through freight trains. It will, nevertheless, be found that true economy will be had only when the largest practicable tonnage rating that the conditions will permit is hauled on way freight trains. The analysis following is intended to emphasize this latter point.

On the same district, the traffic originating at the same points and of the same volume and moving in the same direction in each case, it may be assumed that the train operating cost per ton moved consists of two items: (a) costs accruing for handling the rating with a way freight crew but moving as a through freight; (b) costs accruing from the additional stopping and starting which a way freight train incurs, but which a through freight does not.

It has already been shown in an approximate way what



Relation of Cost Per Ton Handled to Tons Handled

the cost of starting and stopping trains is. (Proceedings Am. Ry. Eng. Assn., Vol. 16, Part 2, p. 271 et seq.) The cost per stop may be written,

$$c = \frac{70V^2Tq}{495{,}000} + \frac{0.84\,(70V^2T)\,0.00015}{495{,}000} + 90w + \frac{1.3657Dw}{2V}$$

In which c = the cost per stop in dollars for stopping and starting.
V = miles per hour from which stopped and to which accelerated.
T = tons in train including engine, tender and caboose.
q = cost of coal per lb. in dollars.
w = rate per second of wages for train and engine crew in dollars.
D = distance in feet in which tons T are accelerated to speed V.

In the above the following assumptions are made:

That 4 lb. of fuel are used per horsepower hour.
That 7 lb. of water are evaporated per lb. of coal.
That water costs 15 cents per 1,000 gallons.
That the train loses 1.5 min. in coming to a stop and releasing brakes over and above the time that would be used if the speed had not slackened.
That the fuel required to move the train from the point where deceleration begins, to the point where acceleration ends, at the regular through freight speed V, would be required if no stop were made; therefore it should properly be deducted and not charged to the cost of the stop.

Substituting values as follows in the above:

V = 25
q = $0.0015
w = $0.0006
D = 3,000

We have, c = $0.000144T + $0.058915, whence the cost per ton per stop will be

$$C = \frac{\$0.000144T + \$0.058915}{T} \qquad \ldots\ldots(2)$$

And for n stops over the district, the cost per ton will be

$$E = \frac{n\,(\$0.000144T + \$0.058915)}{T} \qquad \ldots\ldots(3)$$

The first term within the parenthesis varies with the tonnage handled, while the second term is constant, and greater in value than the first term when the tonnage is less than about 409 tons. The value of E varies directly with the number of stops n, and inversely as the tons handled T.

The cost per ton handled by a way freight crew running over the district as a through freight would, of course, be the amount of the cost divided by the tons. The total cost per ton would then consist of this item plus item E to cover the cost of the stopping and starting that the way freight must perform over and above that required for straight through freight operation. In other words, total operating cost for train service, P, will be

P = (through freight cost + E) divided by the tons.

For purpose of illustration, assume through freight cost at $60 per day, then,

$$P = \frac{\$60.00 + n\,(\$0.000144T + \$0.058915)}{T} \qquad \ldots\ldots(4)$$

Assuming further for purposes of illustration that the stops n, are 20, we have after substituting in above, the following table:

Tons handled, T	Cost per ton for train service, P
100	$0.614663
250	.247593
500	.125237
750	.084451
1000	.064058

The values in the above table are platted in the diagram, which shows graphically how the cost per ton handled is a rapidly decreasing function of the tonnage handled.

The first item in the numerator on the right side of equation 4, shown as $60 above merely for purposes of illustration, should not be understood as a constant quantity. In reality it is a constant plus a variable—the minimum day's pay for the crew and the fuel necessary to take locomotive and caboose over the road, together with water, lubricants, etc., making up those items of expense which are entirely independent of tonnage handled, being the constant; and the increased expense for wages, fuel, etc., which varies with the tonnage handled, being the variable. In any particular case the correct values for this item would have to be determined from the records, or preferably from actual tests. The above formulae are not to be understood as scientifically accurate; their degree of accuracy is no greater than the accuracy of the assumptions upon which they are based. They are merely intended to indicate one way through which the problem may be considered, and it is to be hoped that others who have given the problem any study, and who may be better qualified to discuss it, may be induced to submit their views.

It will be noted that no account is taken of the time, fuel and other costs in connection with station switching, unloading and loading merchandise, etc., coming under the general head of station work. In any case, these costs would be the same regardless of the tonnage handled. They are constant and need not enter into a consideration of the problem other than to be classified as constant expenses and entirely independent of the tonnage handled in way freight trains over the district or sub-division.

RUSSIAN RAILWAY EQUIPMENT SCARCE.—Chief Traffic Manager Shubersky, in charge of Russian railway transportation along the front, has made a report to the Committee of Engineers of the Department of Communications in which he cites figures to show that at the end of the present half year there were 700,000 freight cars less than in the same period a year ago. At the beginning of 1917, said Mr. Shubersky, there were 34,000 broken locomotives, or 16½ per cent. of the total. Today there are 52,000, or 25 per cent. Similarly the cars out of commission were 25,000, or 4.8 per cent, against a present number of 46,000, or eight per cent.

MEETING OF NATIONAL INDUSTRIAL TRAFFIC LEAGUE

The National Industrial Traffic League held its summer meeting at the Hotel Statler, Buffalo, N. Y., on August 23 and 24. The attendance was good and the annual meeting was set for November 15 and 16 at New York City. In his opening address, G. M. Freer, president of the League, called attention to the patriotic necessity of shippers extending every effort to conserve the car supply regardless of what the carriers do or fail to do in that direction.

H. C. Barlow, chairman of the executive committee and now advisory member of the Car Service Division of the Interstate Commerce Commission, addressed the convention at length on the work of the new division. He believed that he had succeeded in large measure in impressing the members of the Commission on Car Service of the American Railway Association with the importance of the shippers' point of view in connection with problems of car supply. The work of the Car Service Division, he stated, is discharged largely through the Commission on Car Service, and he asked that shippers, taking up matters with either committee, send a copy of this correspondence to the other committee. He recommended that shippers route freight in such a way as to permit its diversion through other gateways when the gateways through which it has been routed are congested or embargoed. He believes that some sort of billing notation should be provided whereby the shipper may authorize the railroad to change the route of a car when destined to pass through an embargoed gateway or junction point provided that such a change does not interfere with the through rate. He does not believe that the plan of sailing days for l.c.l. freight, recently put into operation at Philadelphia, will prove successful. He pointed to the fact that the plan has been tried by the New York Central at Cleveland and abandoned. He also stated that it is the imperative duty of shippers to work individually and collectively in the interests of expedited car movement.

The report of the executive committee included opinions on the various recommendations of the Interstate Commerce Commission in its annual report to Congress. The committee expressed itself in favor of the Commission's recommendation No. 1: "That unless the recommendation No. 4 in this summary be followed, Section 15 of the Act to Regulate Commerce be so amended as to provide one period, limited to one year, for suspension of a schedule stating a new rate, fare, charge, classification, regulation or practice; and, if so amended, that Section 6 be so amended so as to provide for 60 days' notice of proposed increased charges." The committee was opposed to recommendation No. 4, which is as follows: "That by statute the Congress fix the interstate rates, fares, charges, classifications, rules and regulations existing at a specific date prior to that of enactment, as just and reasonable for the past, and provide that no change therein, after that specified date be made, except upon order of the Commission, with provision that such statute shall not affect proceedings pending at the time of enactment."

The committee expressed itself in favor of recommendation No. 5 and recounted the action it had taken in the interest of the passage of suitable legislation in Congress. This recommendation is "that if jurisdiction to award reparation remains with the commission (in lieu of the uniform three-year period recommended in our last annual report for the beginning of all actions relating to transportation charges, subject to the Act) the Congress fix a limit of three years within which a carrier subject to the Act to Regulate Commerce may bring action for recovery of any part of its charges, and amend Section 16 of the Act so as to provide that if the carrier begins such action after the expiration of the two-year limit now prescribed in that section, or within 90 days before such expiration, complaint against the carrier for recovery of damages may be filed with the Commission within 90 days after such action shall have been begun by the carriers, and not after."

The committee favored the Commission's recommendation No. 9, that legislation upon the subject of control over railway capitalization be passed. The committee did not believe, however, that any scheme of federal incorporation of common carriers and federal regulation of the issuance of securities, should be adopted, which might put any moral or financial obligation on the government.

The report of the executive committee was adopted in full with the exception of that section dealing with the Commission's recommendation No. 6, namely, "that without abdication of any federal authority to finally control questions affecting interstate and foreign commerce, the Commission be authorized to co-operate with state commissions in efforts to reconcile upon a single record, the conflicts between the state and interstate rates." The committee did not favor this recommendation on the grounds that such a change in the law might postpone or prevent exclusive federal control of railway regulation. A motion was finally adopted, however, which provided for the appointment of a special committee to consider the recommendation further.

The League adopted the report of the committee on car demurrage and storage which was largely a history of changes in demurrage rules within the last six months and the action taken by the League in connection with those changes. The League expressed its approval of certain changes in the demurrage rules governing private cars which were proposed by the special committee on private cars.

The report of the express committee, which was adopted in full, emphasized the importance of better packing and marking of express shipments in relation to increased efficiency by express companies as well as a reduction in the number of claims against express companies.

The League adopted the report of the freight claim committee which pointed to the failure of some carriers to keep records of l. c. l. freight at transfer points and recommended the appointment of a special committee to take the matter up with the railroads.

The report of the legislative committee included a discussion of the law recently passed increasing the membership of the Interstate Commerce Commission and authorizing the Commission to form itself into divisions. Considerable consideration was given to Section 4 of this act which amends the Act to Regulate Commerce to provide that no increased rate, fare, charge or classification shall be filed, except after approval thereof has been secured from the Commission, such approval to be given with or without formal hearing at the discretion of the Commission. It was the general consensus of opinion that Section 4 did not substantially change the provisions of the commerce act and that if the Commission gave merely a perfunctory hearing in any given case the shipper could later secure a suspension until a full hearing had been granted.

The report of the committee on transportation instrumentalities was adopted in toto. The report mentioned in particular the League's opposition of long standing to the car service rules requiring the return to each railroad of its own box cars and restricting the movement and routing of such equipment. It was pointed out that these rules had been materially altered by an order of the Railroads' War Board on April 30, 1917, and that considerably more freedom in the movement of box car equipment had obtained.

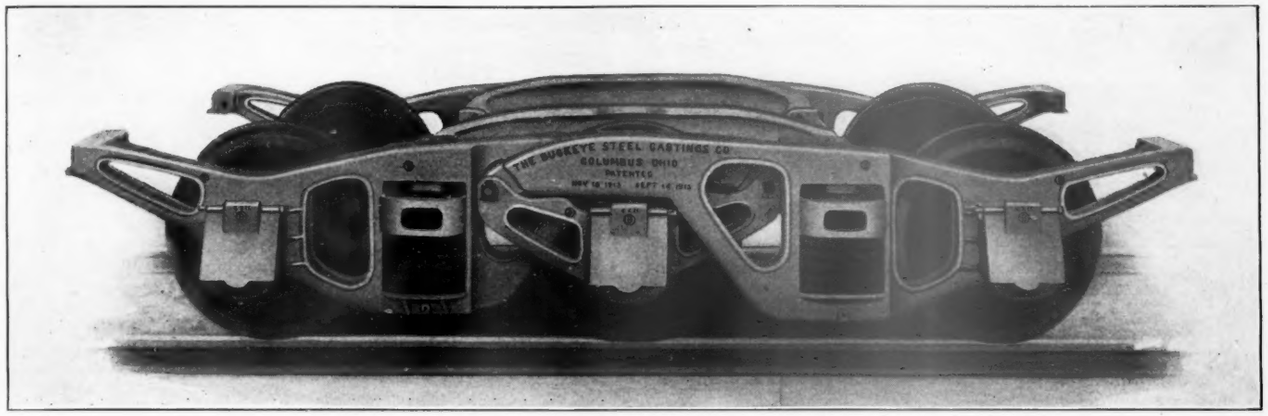
The special committee on railroad leases and side track agreements read a long report, which was adopted after some discussion. Attention was called to the general tendency of railroads to modify railroad leases and side track agreements to put all liability on the shipper. In view of this condition the committee urged the advantages of a uniform liability clause in all railroad leases and side track agreements.

Articulated Six-Wheel Freight Car Truck

Interesting Design Developed for Service Under an Experimental 120-Ton Coal Car for the Virginian

A SIX-WHEEL truck design which contains a number of unusual features has been developed by the Buckeye Steel Castings Company, Columbus, Ohio, for use under one of the four 120-ton experimental steel cars recently placed in service on the Virginian Railway. Sample trucks of a similar design, but for cars of 90 tons capacity, have been in operation since 1914 on the Norfolk & Western, and have given excellent service during their more than 50,000 miles of travel.

Although these trucks possess a flexibility equal to that of equalized six-wheel passenger trucks, the design is such that the entire truck body is composed of parts which may be manufactured in large quantities by steel foundries, thereby facilitating the making of repairs with limited shop facilities.



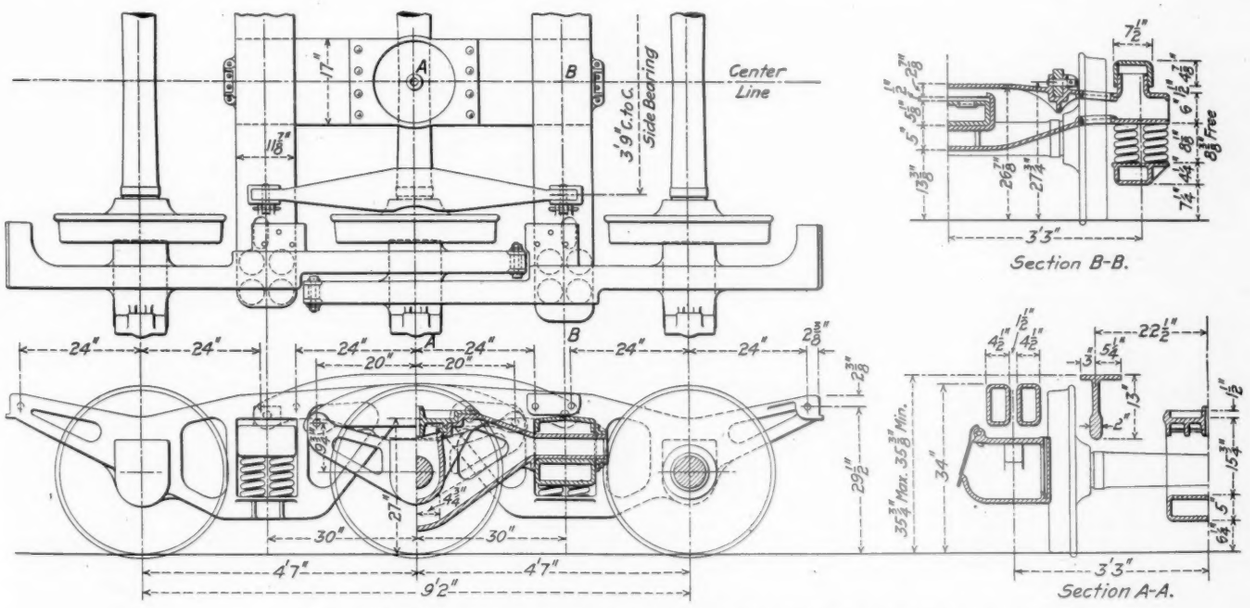
The Buckeye Six-Wheel Articulated Truck

The car to which these trucks were applied was built by the Cambria Steel Company, and has a rated capacity of 218,000 lb., or 120 tons, with a 10 per cent overload, and 4,265 cu. ft. The light weight of the car is 83,300 lb., of which 48,650 lb. is in the car body and 34,650 in the trucks. The ratio of revenue load to total load, with a 10 per cent overload, is thus 74.2 per cent.

The wheel base is 9 ft. 2 in., a short wheel base being particularly desirable for coal car service, in which uneven mine tracks with curves of small radius and steep inclines to unloading machines must be safely negotiated.

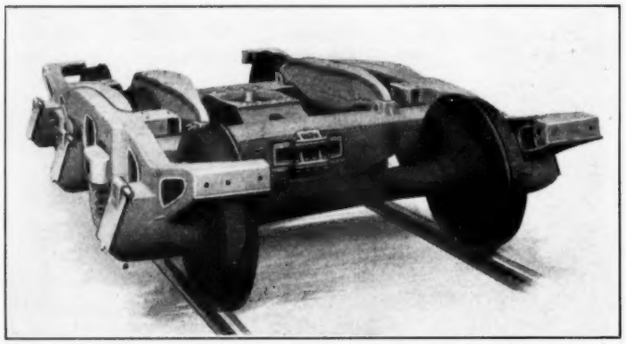
Each side frame consists of an outside and an inside frame, each with a 6-in. by 11-in. journal box cast integral. The middle journal boxes are cast with equalizer arms on either side, the ends of which are provided with pockets in which the ends of the side frames rest.

The equalizing of the cross bolster loads is thus entirely performed by the articulated side frames. By providing the



Plan, Elevation and Sections of the Buckeye Articulated Truck

frames with elongated holes through which the equalizer bolts pass, a limited amount of forward and backward movement of the frames is allowed, thereby affording flexibility to the sides of the truck and enabling it to take comparatively short curves with no appreciable binding of the wheels. The location of the bolsters in the side frames is such that the distance between the point of loading and the center of the end journal is one-half of that between the point of



End View of the Truck, Showing the Longitudinal and Cross Bolster Connection

loading and the bearing point in the equalizer pocket. Any unbalanced load on one of the frames which causes an upward or downward movement of the equalizer arm, is immediately counteracted by a shortening or lengthening of the moment arm between the point of loading and the bearing point in the equalizer pocket, the contour of which is designed to compensate in this manner for variations and inequalities in loading. The equalizer bolts serve only to hold the side frames and equalizers in place, the load being transmitted directly through the bearing between the castings.

The bolster is made up of three parts, i. e., one longitudinal center bolster and two cross bolsters. In order to keep within the low limit of 27 in. for the center bearing height, a unique type of longitudinal center bolster was developed. The bolster itself is dropped below the center axle. The center plate is removable and spans the axle. Ample clearance is provided between the center plate and the bolster member below the axle to allow the axle the necessary freedom of vertical movement to provide for passing up and down steep inclines to coal docks, or in case of derailment to insure against excessive strains which might otherwise be imposed upon the castings.

The cross bolsters are cast with openings through which pass the ends of the center bolster. Sufficient clearance is provided to allow a limited movement of the center bolster, thereby adding to the flexibility of the truck and greatly facilitating the ease with which the bolsters adjust themselves to inequalities of loading. The side bearing bridges are arranged on the inside of the frames and are supported directly by the cross bolsters. Rectangular shaped boxes on top of each end of the cross bolsters fit into recesses in the top members of the side frames and serve as column guides.

The side frames and equalizers are of channel section, including the brake brackets at the end of the frames. The two inside frame castings on each truck are interchangeable, as are also the outside frames.

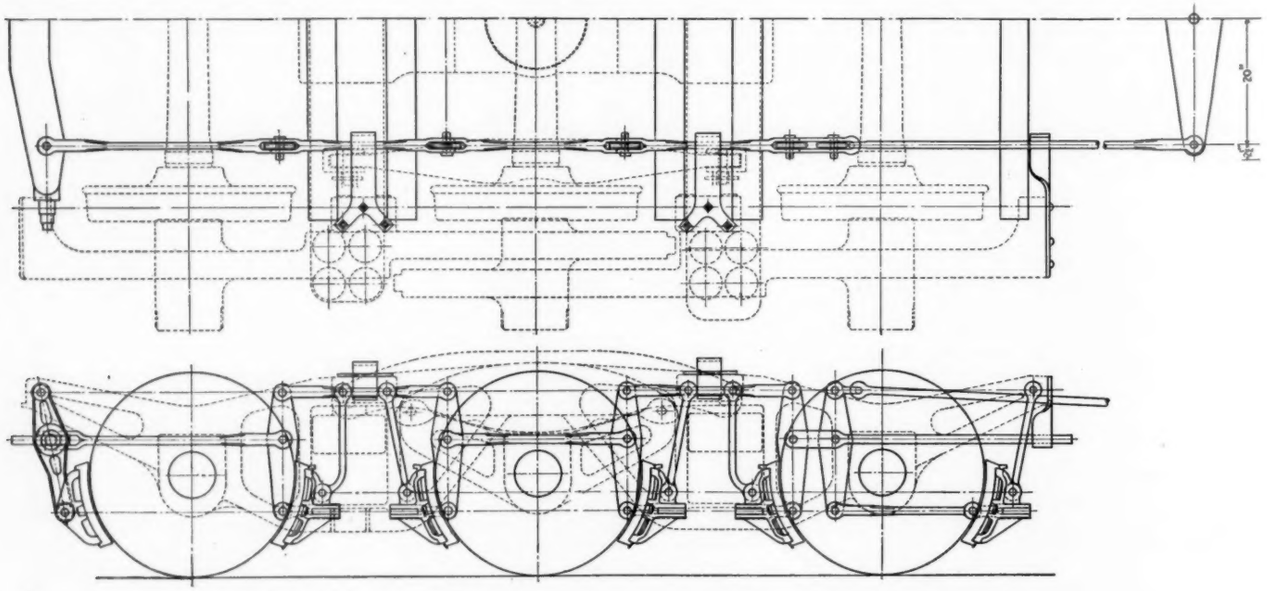
The trucks are equipped with a clasp brake of extra heavy pattern designed by the American Brake Company. All beams are hung from brackets cast integral with the side frames. The weight of the clasp brake rigging per car is 4,100 lb., leaving for the weight of the trucks alone 30,550 lb. The steel castings account for 14,580 lb. of this weight.

STANDARD CODE RULES 17 AND 90

By Harry W. Forman.

17. The headlight will be displayed to the front of every train by night, but must be concealed when a train turns out to meet another and has stopped clear of main track, or is standing to meet trains at the end of double track or at junctions.

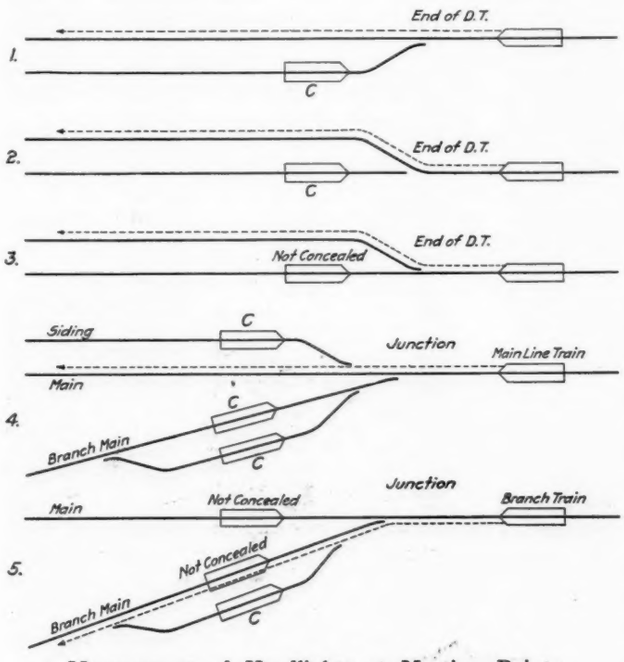
If trainmen and enginemen always had to depend upon uninterpreted rules to determine just how to operate their trains, confusion would sometimes result, as many code rules are so abridged that much must be left to their judgment. Rule 17 does not mean that the headlight must always be concealed while standing at the end of double track, or at junctions. Whether or not an engineman should do so depends upon the position of the switch in front of his train. It should be a well grounded principle in safe railroading that a headlight must never be covered while a switch is so lined up that an approaching opposing train might, should its engineman miscalculate distance or lose control of his train, strike the waiting train.



Clasp Brake Rigging Applied to Buckeye Trucks under Virginian 120-Ton Coal Car

Code rules do not require the train which is standing on the main track at a meeting point to adjust the switch so that the opposing train will run in on the siding, but this should be done, provided, of course, the train which holds the main track arrives in time and stops near the switch. In this situation, after the switch has been opened, the standing train should dim its headlight, if it be an electric or any other kind which is exceptionally brilliant, because, if not done, the engineman of the train which must take siding will find it extremely difficult to determine the position of the switch, or see any hand signals necessary to be given.

Under this interpretation of the rule, every engineman should understand that the fact that some other crew may turn the switch for him, does not relieve him from being prepared to stop in time to allow one of his trainmen to open



Management of Headlights at Meeting Points

Trains Marked C Have Headlight Concealed.

it. The crew of the standing train must be instructed not to give a "Come ahead" signal if there are any cars or trains on the siding. In fact they should, in such cases, give a slow-down, or a stop-signal. The diagrams below may help to make the intent of the rule clear.

90. (Fourth paragraph.) The engineman will give signal 14 n at least one mile before reaching a schedule meeting point with a train of the same or superior class, or at a point where by train order the train is to meet or wait for an opposing train. Should the engineman fail to give signal 14 n as herein prescribed, the conductor must take immediate action to stop the train.

The gentlemen who formulated Rule 90 may have wished to be understood as meaning, "Engineman will give signal 14 n one mile before reaching the entrance switch at the point beyond which his train must not go until the expiration of the time named in his train orders, or until the opposing train, or trains, for which his train is restricted, either by time-table or train order, shall have arrived. Should he fail to so signal, then the conductor must take immediate action to stop the train in time to prevent collision." But there is a good deal left out. If it be thought best to require enginemen to sound the whistle in a way that will assure their trainmen that train orders or opposing trains are not being overlooked, certainly this precaution should be taken in every case where one train must wait for another, without regard to whether such meeting point be by time-table or train order. The schedule meeting point is no more important than any other. In practice, I am inclined to think that many enginemen do so whistle, notwithstanding the rule does not cover every case wherein they ought to whistle. Should the field be canvassed, it is probable that a slight majority of officers would vote to continue whistling meeting points; but not every railroad man who has had an opportunity to observe its workings is willing to concede the necessity of this socalled safeguard. So much whistling is not only a nuisance, but we are drifting toward a condition of mind where we do not regard the whistle as vital, having so often been misled; and we are not taking proper action to prevent a possible collision when there is a failure to whistle. Every division has its enginemen who whistle incorrectly and unnecessarily, and also those who use judgment in this particular. Those who confine the use of the whistle to actual cases of need get along as well as, if not better, than the others; and have no more accidents or misunderstandings than those enginemen who make a plaything of the whistle lever. I never take a trip extending over several different roads without returning more fully convinced than ever that the rule for the public crossing whistle should be changed to two long, one short and one very long, gradually-dying-out blast, this being a signal often heard. It is so entertaining to hear an engineman string out his whistle about four times longer than necessary, when one is trying to sleep. It is not that enginemen have not the proper appliances, or have not been most fully instructed; some are just bullheaded, or too ignorant to appreciate the value and satisfaction of accurate whistling. Every engineman who lives near the railroad devotes much of his time while off duty to showering imprecations upon his brother engineers who deliberately indulge in such damnable practices while passing his house. This condition may be expected to continue until actual suspension is applied for this kind of carelessness, the same as is administered for other violations of rules.

Assuming that Nos. 1 and 2 are of the same class, No. 1 superior by direction, and that they are scheduled to meet at G, it is clear that only No. 2 would sound the meeting point (or restriction) whistle. If directed by train order to meet each other, or No. 1 be ordered to wait for No. 2, or No. 2 be given right over No. 1 to G, then both enginemen must sound this whistle.

Should No. 1 be instructed to run late, or wait at given stations until certain times for No. 2, the engineman of No. 2 must sound this whistle about one mile short of the station beyond which he must not move against No. 1. But No. 1 is not required to thus whistle, unless it finds that it is going to arrive at such station in advance of the time named, in which event it would seem to be proper for the engineman of this train also to whistle as per 14 n. It may be contended, however, that the effect of such an order is merely to change the time-table time of No. 1 by that much, and that therefore it should not whistle. Probably this view of the matter will eventually obtain. There is at present a difference of opinion as to this.

Should No. 2 be one hour late, No. 1 on time, and No. 2 be allowed to go to any station which it can make for No. 1 without train order help, it is clear that provision is not made in the rule for No. 2 to sound this meeting point whistle; though it is just as important that it do so, the same as in approaching the schedule meeting point. Watches sometimes go wrong.

There is much complaint about this signal not being distinctive. Often it is taken for a public crossing whistle if there is a crossing nearby. I have found that when two full seconds are allowed to elapse between each two blasts of the whistle it more surely attracts attention. It can be heard much better by the trainmen concerned. Try it. It is true that an unfortunate combination was selected. One long, a short and a long would have been better; or one long and one short.

A. C. SIGNALS ON THE SOUTHERN RAILWAY

When present contracts are completed the entire line of the Southern from Washington, D. C., to Atlanta, Ga., 640 miles, will be equipped with automatic block signals. A very thorough study of this problem was made before the first work was undertaken, with the result that the standards then adopted have been maintained without important changes for all the later installations. This line will be one of the longest in the country under the protection of a. c. signals, and the high degree of satisfaction rendered by the installation is convincing proof of the value of this system. The use of alternating current, supplied by a power line from a central station not only makes possible much longer track circuits, with the lessened expense for relays, and reduces by one half, or more, the maintenance force that would be required with direct current, produced by primary batteries at each signal; it also makes available other economies, such as electric lighting of signals and of passenger stations and the use of power for small motors at isolated locations; so principally on account of the installation of passing sidings. The need arose in several cases for a special signal indication for use on ruling grades to permit full tonnage freight trains to pass a stop signal without first being brought to a stop. The form of indication adopted is a 15-inch yellow disk mounted to the right of the signal mast, 7 ft. 9 in. below the blade, in the center of which is displayed a letter G which is illuminated, when the signal is in the stop position, by an electric lamp mounted behind the disk. A tonnage train is permitted to pass a stop signal having this marker, at not over eight miles an hour, expecting to find the block occupied, a switch open or the track broken or obstructed.

No switch indicators are provided except at the junction of single and double track. The rules provide that an interval of two minutes must elapse after a switch leading to the main lines is opened before a movement can be made past the fouling point. This has worked out very satisfactorily, thus far.

The G. R. S. 2A signal mechanism with steel semaphore blades and two 12-volt 5-watt Mazda lamps have been used

Typical Signal Location Showing A. C. Line at the Right

that the cost of generating stations, which is the largest item of expense, beyond that of a direct current installation, is far outweighed; and beyond all questions of immediate economy there is the additional safety due to the use of relays which cannot be dangerously energized by foreign currents.

The first signals were put in service between Denim, N. C., and Charlotte in February and March, 1913. Successive sections were equipped as the work of double tracking was completed. In three cases short sections of "A. P. B." signaling were installed on single track, but two of these have been changed over to double track signaling and the third soon will be.

Preliminary study showed that for the existing traffic of 40 to 50 trains daily it would be most economical to adopt a standard block length of two miles, with the thought that intermediate signals could be installed when traffic justified, without disturbing the existing installation. This block length has been adhered to throughout, although in several cases the intermediate signals have already been required, for all of the new work. The signal motors are 110-volt and in the first installation were of the series commutator type. Later developments, however, soon led to the substitution of induction motors, which are now used throughout. While the induction motor requires somewhat greater power, it operates the signal arm from zero to 90 deg. in the same time required by the series motor, seven seconds, and eliminates the weekly or semi-weekly cleaning which the earlier type required.

The 8½-in. wrought iron numbers used to designate the signals have repeatedly demonstrated their advantages. These numbers are painted white on the face and black on the back and are bolted to a wrought iron supporting bar which is attached to the pole with clamps. The numbers are distinctive in appearance, are easily painted and do not chip off or break.

A six-strand aluminum cable on a steel core was chosen for the three-phase, 4,400-volt transmission line on account of its greater conductivity, increased strength, lighter weight, ease of erection, and cheaper first cost, as compared with

No. 6 hard drawn copper. The first cost is the only one of these advantages which has changed since the first installation, and in spite of increases in price this material is still being used for the transmission line. Its strength has been repeatedly demonstrated in service on this line. In some cases trees have blown over on the aluminum wire without breaking it, and when the trees were cut down the wire has sprung back into place. The steel gains which were originally used on all poles, to obviate the necessity for crossarm braces and to preserve the strength of the pole, have been eliminated on account of the high cost of steel. It has been found that under present conditions it is cheaper to provide crossarm braces and to cut gains in the poles. The original line was built with ½-in. steel pins on the crossarms for the high tension line, but it has been found that the standard 1¼-in. locust wood pins used for the low tension line are fully as good, or better, for this high tension line, and of course are much cheaper.

The transmission line is sectionalized at intervals of about 5 miles, the switches in the first installation being immersed in oil. It developed in service, however, that this line carried such a small amperage that the oil switches could be dispensed with, and hook switches used instead. These switches are of the Westinghouse Type M, consisting of a copper bar mounted on vitrified porcelain attached to a cast iron pedestal. The porcelain supports are designed to withstand the voltage of the circuit without breaking down or puncturing. The switches are operated by a hook mounted upon the pole which engages in a hole in the switch blade. This enables the switches to be opened even when the circuit is alive if necessary.

The most important single cause of trouble with signals on this line is lightning. This territory is particularly subject to electrical storms at certain seasons and it has proved a very difficult matter to entirely eliminate disturbances in the signal system from this cause. It is not uncommon to hear those familiar with the maintenance of these signals remark that if it were not for the lightning "they wouldn't know they had any signals." Three distinct types of protection have been provided from the beginning, one in all low voltage circuits, another for transformer protection on the transmission line, and the third for the protection of power house apparatus. The 1-in. galvanized rods used for arrester ground have been salted and every known precaution has been taken to improve the quality of lightning protection, but in spite of all such precautions the problem cannot yet be said to have been satisfactorily solved.

The construction and maintenance of the signal system is under the direction of W. J. Eck, signal and electrical engineer.

College Gets a Sleeper. A Pullman sleeping car will be used next year to supplement the dormitory of Highland College, Highland, Kansas. It is a ten-section observation car, accommodating forty persons if two sleep in each bed, and has a reading room and a vestibule. Dealing, as they do, with students working their way through college, the trustees of the institution were hard pressed this spring when it was announced an addition to the dormitory would be needed next year to accommodate the increasing enrollment. The college had just finished raising a $50,000 endowment fund, and more money for building a dormitory could not be had. Then President W. Gilbert James learned the Pullman Company had presented a Pullman car to a "self-help" college in the East, and he made application for a sleeping car for Highland. The request was granted, and the car has been started on its way here. A wrecking car crew will be sent here to move the car to the college campus. The car is old, of course, but it promises to fill adequately the need for which it is intended. It will become a permanent part of the school's equipment.—*Kansas City Star.*

PURCHASE AND MAINTENANCE OF LABOR ON RAILROADS

By E. Wanamaker
Electrical Engineer, Rock Island Lines.

Much has been said and written regarding the accomplishments of specialists, efficiency engineers, etc., who have devoted their time to the economic purchase of all kinds of materials, machinery, etc., and the maintenance and operation of such equipment. On many railroads the subject of fuel has been given close attention by specialists, often resulting in a marked reduction in the fuel bill which amounts to from 7 to 15 per cent of the total operating expenses. To obtain supervision that will secure an economic use of the fuel, large salaries are paid and a large staff of men is employed. Likewise, large salaries are paid to men who are familiar with the different equipments in use on the railroads as well as to the men who secure the economic installation of many materials entering into railway construction.

These are all important and worthy of the attention that has been given them, but inasmuch as nearly 50 per cent of the railroad dollar is expended for labor, it would seem that if there is one particular item on the railroad that justifies the employment of expert supervisors, it is the hiring of employees, or the purchase of labor, together with the matter of educating and caring for the workers, which might be called the maintenance of labor. It is a vast subject and today by far the most important with which the railroads have to deal. As a general rule, it requires far more ability to handle the men, who in turn handle the equipment and materials, than to choose the proper equipment and materials.

When an important machine, as, for instance, a large air compressor, is to be purchased, the engineers make careful and minute investigation requiring the service of a number of men several days, when the total cost of the compressor installed will not exceed $20,000, and oftentimes when the difference in economy of operation of the several compressors considered would not lose the company more than $500 or $600 per year were the poorer one purchased. On the other hand, consider the case of a foreman employing four men. Their total wages for the year will probably amount to $5,000, but due to ignorance or inefficiency they may during the year easily cost the company more than $5,000. The purchase and care of labor has not been given nearly the attention that it should have received.

Labor, or laboring men have too often been looked upon as cogs or spokes in the wheel, when it should have been borne in mind that each and every individual has his own personality, his own feeling, his own indifference, or his own ambition. In the employment of labor, much attention should be given to the examination and questioning of the prospective employee by a man who is thoroughly competent to judge men. The employment of labor on railroad systems should be placed in the hands of an employment department made up of specially trained men in order that the proper kind of men for the various occupations be chosen at the start. Then these men should be followed up by the labor department in order to see that they are properly educated in their work, and also in all general matters that affect them in their relation to the company by which they are employed. It should be seen that the square man does not get into a round hole; that the employee is protected, and that faithful and competent service is properly rewarded. It is evident that inefficient labor in any organization holds down the flat rate for all, and whether or not labor contracts exist, individual effort and efficiency should be rewarded financially over and above the flat rate, which would be only the minimum. When individual effort is substantially rewarded, we will again see hearty and efficient co-operation between

labor and capital, with its resultant success, such as largely existed prior to the advent of the large corporation. In this way, the personal element will again come to the front, making it worth any man's while to put forth his best efforts in his work.

The writer has been termed, at different times, a sort of efficiency engineer or crank; however, it would seem that a competent efficiency engineer is only a good business man, who takes sufficient time to sit back and thoroughly study and investigate all phases and conditions of his business in order that he may change any practice that does not secure efficient and economical results. Constant association from boyhood with many classes of labor, and a close study of men, have convinced me that the method of rewarding labor outlined above is both efficient and just.

A labor department is fully as necessary an adjunct to a railroad as is the department for testing materials. The function of the labor department is different however. It would test the men, but go further than the department for testing materials and follow the welfare of the men and their relations with the company as long as they are connected with the service. The statement "that no manager is greater than his organization" holds true. The loyal support of each employee is necessary; likewise, loyalty of the manager and the company to the employees, if substantial and lasting success is to be attained. In order to secure good service from the men, it will be necessary for the company on its part to insure good service to the men by guaranteeing a fair compensation for work well done, and the continuity of employment for the deserving. Undoubtedly the welfare of the employee should be directly connected and to some extent proportionate to the welfare of the company.

The system used need not be bonus or piece work; however, it is probable that a combination of a fair flat rate, together with piece work, for some classes of labor, and bonus for other classes, would be the best method of rewarding individual effort and providing the proper incentive to secure good work. It would be well if free insurance for all employees was carried by the company, for officials as well as the rank and file. However, this benefit should accrue only to those who render good service. Pensions for disabled or superannuated employees might also be taken care of in a similar manner, or it would probably be better still to proceed on the basis that only those be retained in service who are good, honest workers. This would mean that eventually practically all employees in the service would be first-class in every respect.

The retention of unfaithful employees should not be tolerated. Under no condition should any labor organization be permitted to force unfaithful employees on any employer. Fair play must be assured by and between the employer and each and every class of employee, and faithful, efficient service rewarded by each side doing its very best to assist the other. This is practical from the standpoint of business efficiency—indeed, it is not only possible, but it is absolutely necessary for the good of all concerned.

There have been factories in which the overhead was unusually high, due to the fact that the machinery used and the buildings in which it was installed were very expensive, yet the entire plant was only in use 10 hours out of 24 and the overhead expense was a large proportionate part of the total cost of production. Would it not then be wise to have, in such cases, two eight-hour shifts per day securing 16 actual working hours out of the 24 instead of 10? Take the case of a factory turning out 100 pieces of machinery per day and producing all that was possible in the 10-hour day. If it was desired to turn out 200 pieces per day, it would be necessary to double the size of the plant. Now, if instead of duplicating the expensive machinery and buildings, two shifts were employed, working from 7 a. m. to 3 p. m. and from 3 p. m. to 11 p. m., the output could probably be doubled without increasing the plant size and yet the working hours would, no doubt, be quite as conducive to the well-being of the employees. A case of this kind would only apply on the railroad to large shops where heavy repairs are made to motive power and rolling stock.

An employment bureau might well be formed on all our large railroads to be composed of the heads of the different departments; for instance, the general manager, superintendent of motive power, chief engineer, traffic manager, superintendent of dining car service, electrical engineer, superintendent of telegraph, etc. This organization should carry on its work through the superintendent of an employment and educational bureau whose relation to these officers would be analagous to the relation existing between the purchasing agent and the testing department. It would, no doubt, be necessary to organize a trained staff to follow up the educational and record work.

Due to the lack on most railroads of a method or system for educating employees, it is now becoming a difficult matter to secure competent help. Take, for example, the problem of obtaining competent section foremen. The class of track labor now generally employed does not, as a rule, furnish suitable material for making foremen, and yet the maintenance of track is constantly becoming more important and requiring more skill. An educational system for this class should be started now in order that the old section foreman, now being rapidly retired, can be successfully replaced.

Hand in hand with the proper method of rewarding and educating employees should go the elimination of the departmental viewpoint in so far as possible, meaning by this that although the employees of each department specialize on the work of that department and become expert therein they should also have a fair understanding of the work done by the other departments in order that all may co-operate to advantage instead of hampering each other. The working of one department without regard to the effect of its policy on other departments has often caused an organization as a whole to trip on its own feet.

It is just as necessary for a railroad to have its employees interested in all its departments, say, for instance, the traffic department, which sells the passenger and freight transportation, as it is for any successful merchant to have the hearty co-operation of his employees.

Last but not least, if the use of intoxicating liquors were stopped labor troubles would be greatly decreased and efficiency substantially increased.

INCREASED CAR MILEAGE ON THE EL PASO & SOUTHWESTERN

One of the best examples of improvement in the handling of railway equipment is afforded by the recent performance of the El Paso & Southwestern. For the month of May, 1917, the average miles made per car per day for system cars was 36.90 as compared with 31.64 one year ago and 27.56 in May, 1915, while the combined average of system and foreign cars was 49.17 miles per car per day this year as compared with 45.24 for the same month last year and 37.75 two years ago. Similar improvement has been shown in other months of this year as seen in the table:

		System	Foreign	Both
January,	1915	18.72	58.64	30.09
	1916	27.41	62.64	38.51
	1917	33.50	56.07	43.51
February,	1915	20.87	57.98	30.69
	1916	30.25	66.82	42.25
	1917	35.82	47.60	41.66
March,	1915	18.30	63.75	29.95
	1916	28.98	66.53	41.88
	1917	32.24	70.76	47.50
April,	1915	20.54	58.36	30.18
	1916	30.04	70.07	44.03
	1917	34.95	64.02	47.97
May,	1915	27.56	64.82	37.75
	1916	31.64	67.09	45.24
	1917	36.90	66.56	49.17

In January of this year the average miles made per day by freight locomotives over the entire system was 116.50 and in May 128.40. The same figures for passenger locomotives were 170.3 for January, 1917, and 172.69 for May. The average mileage of locomotives in non-revenue freight service in January was 106.80 and in May 91.34, while the mileage of switch engines was 79.19 and 73.44 respectively. The total average mileage per day per engine for all classes of service was 117.52 in January and 122.16 in May, an increase of 4.64 miles per day in the latter month.

IF I WERE PRESIDENT OF A RAILROAD

By B. B. B.

The real reason why the young college man does not enter railroad service is because of the uninviting future which the railroad work offers to him. If I were president of a railroad I would so operate it that it would command the attention of the better class of young men who are casting about for their future work. Some of the things I would do are:

I.—I would have a thorough check made of all the positions on the road, and fix an equitable salary commensurate with the work to be performed and the responsibility attached to each position. I would then employ men to fill the positions who were worth the salary paid. By doing this there would be no reason for working the men more than eight to ten hours a day during normal times, because with the salary commensurate with the position, it would not be difficult to secure men who could perform in eight to ten hours a day the duties which the men with less training must take 12 to 15 hours a day to do. To perfect this arrangement would require the best of judgment on the part of the persons fixing the salaries, because in adapting the salaries to the positions the questions of skill to perform the duties, and the responsibilities attached to the position would have to be the determining factors, instead of the amount of actual technical work connected therewith.

There are a great number of positions paying from $75 to $100 a month which require no skill or training, and very little responsibility, but require from 12 to 15 hours' work a day, when two men at $50 a month could do the work without half the drudgery. Efficiency would be the watchword, and the highest efficiency can never be attained when persons have a lot of detail drudgery work which keeps them on the job for long hours each day, and who never know what it is to be caught up with their work.

II.—I would have an employment department, and place a competent man in charge of it—a man who knew men. This department would keep a personal record of all employees of the road, from the messenger boys up to the general manager, which record would consist of such information as to enable the department to determine the capabilities of the persons so employed. Accurate information would be furnished this department by the heads of the different departments of the road. When a position was vacant the matter would be taken up with the employment department and the employee who was most deserving and most competent, regardless of what department the vacancy occurred in, or in what department such employee was working, would be given an opportunity for the position. No outside man would be employed to fill any position if such vacancy could be filled by promoting some person already in the employ of the company. In making such promotions, of course, the duties of the position, the capabilities of the person to be promoted, etc., would all have to be taken into consideration. By this plan, every person who entered the service of the road would feel that he was in line for promotion from the moment he became connected with it. When it was necessary to employ outside men, I would, where possible, employ college men. If they could not be obtained, I would then employ men who were desirous of bettering themselves, with the idea in view of educating and training them to fill more responsible positions, and not just filling the present vacancy.

I would have it thoroughly and distinctly understood that no salaries would be increased, but that all increases in salaries would be attained by promotion. With the salaries fixed commensurate with the positions, there would be no necessity for raising salaries, especially with the above employment and promotion plan in effect.

III.—After all expense of operation had been paid each year, I would deduct a sufficient amount from the net earnings of the company to pay six per cent on the total amount of money invested in the property of the railroads; this six per cent to be set aside to the stockholders—the balance of the net earnings would be divided fifty-fifty between employees and stockholders; the amount so set aside to the employees to be paid them pro rata according to the amount of yearly salary each employee received. With this plan the employees would feel that they were a part of the company; that if the company made money, they would get their share; and that if the company lost money, they would be losers with it. This plan would enable the company to secure the services of a better class of employees; would cause the employees to be more diligent and work harder both to prevent losses to the company, and to secure revenue producing business for the company; this would have the effect of increasing the efficiency of the employees to a degree never yet attained on any railroad in the United States—or anywhere else. I firmly believe that if the above plan were adopted that a saving of from six to fifteen per cent in operating expenses—and in many instances a great deal more—could be effected; and that the operating revenue would be considerably increased.

I believe that if the above were put into effect, it would not be very long until all troubles with the labor organizations would end. The general standard of employees would be raised, because a higher class of men would be attracted to the work; efficiency would be increased, because the employees would have some incentive for taking interest in their work, because they would feel that they were a part of the "company," instead of being a part of the "machinery" to run the company; the ratio of operating expense to operating revenue would be smaller, due to stopping the leaks on the one hand, and securing more business through all classes of employees on the other hand.

As the "railroad game" now stands, what inducement is there for a college trained young man—or any ambitious young man with a fair amount of education, and fair ability—to enter the railroad work as a life business, when other industries offer more favorable working hours, more favorable salaries, better opportunities for rapid advancement, and better social standing? The railroads are the arteries of American industry, and are entitled to the very highest class of men in their service, but the managements of the railroads have not kept pace with the managements of the other industries of the United States in the way of making the railway service attractive enough to secure the best class of men in its service. Other industries school and train their employees for their special work, while about the only training a young man gets in the railroad work is a "balling out" because he cannot handle it like an "old head"; and a young man who has spent his life up to the age of 25 years, and spent approximately ten thousand dollars to secure a college education does not care to spend ten to twenty years longer "coming up through the ranks" in order to reach a point where he can command a salary of from $200 to $300 a month, when there are so many different avenues of business which will land him far above this mark in one third the time.

INCREASED RATES TO OFFSET INCREASED EXPENSES

By W. W. Atterbury

Vice-President in Charge of Operation, Pennsylvania Railroad.*

It is hard to realize how rapidly the demands upon our railroads increase. Roughly speaking, traffic doubles about every ten or twelve years. The facilities of the railroads must grow with the traffic, or industry must slacken its pace.

In 1903 there was a great congestion of freight in the Pittsburgh district—the most severe ever known up to that time. Following that experience, great improvements were made in the railroad facilities here. At the time we were severely criticised for our seeming extravagance, as many thought the extensions then made were in advance of all possible demands for a half century. Yet here we are, after the lapse of only 14 years, face to face with a still greater congestion and the need for still more extensive and costly additions.

No one at all familiar with our national history needs to be told that from the time when railroads were first constructed they have been the dominant factor in the commercial development of this country, and in the settlement and opening up to civilization of its vast areas. We are, in truth, a railroad-made nation.

If you stop to think, I am sure you will also realize that railroad building and expansion, throughout our periods of growth and development, have always preceded and not followed the processes of our commercial and agricultural development, and the outspreading of our population. The railroads, indeed, have been the pathfinders and pioneers.

This condition has held true until within a comparatively few years—let us say about a decade. In this latter period, railroad development, as the result of the causes to which I have referred, has been slowing down and today has practically ceased.

Meanwhile, however, our industries, under the spur of individual enterprise, untrammeled by artificial restraints, have pushed forward, until we have now reached the position in this country of producing faster than we can distribute and exchange. I do not see how it is possible to escape the conclusion that unless the way is soon opened to permit our railroads to resume a normal rate of growth, the commercial development of the United States must shortly also cease.

This is a serious situation. It carries the threat of idle mills, idle men and idle machinery; nevertheless we are face to face with it and we might just as well understand it.

Now, what has been the effect of inadequate revenue? What fundamental error has imposed this needless check upon our national growth and prosperity? It must, in the final analysis, be attributed to failure to appreciate a simple truth.

In physics and in chemistry we all know it is impossible to make something out of nothing. It is a pity that, as a people, we do not also realize that it is as impossible in the field of economics. In the realm of business this truth means that every desirable thing must be paid for, in some way. Let me say most emphatically that this applies in the highest degree to railroad service. If you want adequate, prompt and certain service, you must pay for it, and any one who tells you that it can be gotten without being paid for is imposing on your credulity.

The erroneous idea that shippers, passengers, labor, equipment makers and material dealers can go on indefinitely getting constantly more and more out of the railroads, without any one having to pay for it all, has found concrete expression in vicious regulation and legislation. Its object has been to punish; its effect has been to maim and destroy. Constructive development of the transportation system has almost been lost sight of, and possibly it would still be hidden by fogs and obscurities of two-cent passenger fare laws, extra-crew acts, wage-increasing statutes, and other enactments and measures having for their purpose getting more and giving less, had not the events of the last two years, and particularly the international situation, awakened the country. The railroads have been compelled to obey these laws, every one of which adds to the cost of rendering railroad service, and have been expected to do so without adding anything to the price received for the service.

Pressure has been constant to force rates down still lower, in the face of rising costs. Surely it is a matter of common sense that this process cannot go on indefinitely. Unless I am much mistaken, the limit has now been reached, so far as the railroads, in general, are concerned.

Is it any wonder, then, in view of the narrowing margin between railroad receipts and expenses, that the New York Central Railroad, one of the great transportation properties of the country, recently failed in the effort to sell $25,000,000 of stock at par, or that the Erie Railroad and Southern Railway failed in their attempts to work out comprehensive financing schemes?

In 1916, the only railroad stock issued on the New York Stock Exchange, for new construction, was $351,145.65, issued by the Cleveland & Pittsburgh Railroad for a small amount of work done in 1915—and even that stock was guaranteed by the Pennsylvania Railroad.

Last year, in fact, was the first year in which not a single share of new railroad common stock was listed on the New York Stock Exchange, in which the public took the chance of the investment of money for new railroad building in the United States proving sound. These are not pleasant facts, but you cannot ignore them. They are of profound importance to the shippers of this country. You know what it means to be short of facilities. You appreciate now how intimately the normal processes of our national life are dependent upon adequate railroad facilities. The one thing staring you in the face whichever way you turned was, that the railroads are swamped with business which they haven't the facilities to handle properly. The lines haven't the terminal facilities; they haven't the power; many have not the cars to handle properly the business that has been forced upon them during the past year.

There is but one remedy for the problem of the railroads, and that is to allow them higher rates—rates commensurate with the cost of rendering service and with the added demands that are daily imposed upon the carriers.

It is to the best interests of shippers and the general public alike that railroad rates be advanced. What the public most needs, is adequate service.

Paradoxical as it may seem, an advance in freight rates would lower the cost of living, rather than raise it. Will one of you question the statement that the price of food products, fuel, supplies, etc., has been materially increased through the local shortage of equipment, or our inability to move? Had rates been high enough in the last few years to have permitted the additional railroad improvements that you all now recognize are so badly needed, foods, fuel and other necessities would now be moving to market freely, in greater quantity, and the normal law of supply and demand would not be upset by a failure of transportation.

In short, freight rates play such a small part in the cost of nearly all the daily necessities of life, that an advance would, if apparent at all, be offset by normal supply.

On the other hand, the efficiency of the railroads would be so greatly increased that the ultimate effect might well be a general lowering of prices as a result of the improved machinery of distribution and exchange that the country would possess.

*From an address delivered at the 15th annual dinner of The Traffic Club of Pittsburgh on March 29, 1917.

General News Department

The Interstate Commerce Commission, Division of Valuation, has issued specifications in pamphlet form for maps, charts and schedules of telegraph and telephone properties owned by railroads, telegraph, cable and telephone companies, effective August 1, 1917. These specifications describe in detail the character of the maps desired, the manner of their preparation and other requirements for guidance in their preparation for filing with the division of valuation.

The Senate has recently passed a bill, S. 2718, appropriating $100,000, to be expended by the Postmaster General in conducting experiments in the operation of motor-truck routes in the vicinity of such cities of the United States as he shall select, for the purpose of promoting the conservation of food products, and to facilitate the collection and delivery thereof from producer to consumer. The Postmaster General is to report the results of his experiments to Congress.

An agreement embodying the final details of the settlement of the wage controversy between the southeastern railways and their shop employees was signed on August 24. The principal terms of the settlement, which were published in the *Railway Age Gazette* of August 10, were decided by Secretary Wilson of the Department of Labor, and include an eight-hour day for most of the employees, together with increases in wages, which altogether, it is estimated, will cost the railways about $8,000,000 a year.

Despite unusual operating conditions caused by the enormous movement of materials and supplies to the army camps, the Nashville, Chattanooga & St. Louis made an excellent record in the operation of freight trains during the month of July. The average daily running time of the principal freight schedules operated by the line were as follows: Southbound (Chicago connection), Martin, Tenn., to Atlanta, Ga., 24 hours, 55 minutes; southbound (St. Louis connection), Martin to Atlanta, 25 hours, 8 minutes; northbound (Atlanta to Martin), 25 hours, 19 minutes. The distance from Martin to Atlanta is 431 miles, and the average running time, including stops, was 17 miles an hour.

General Manager George W. Stevens, of the Chesapeake & Ohio, has issued to employees a circular calling attention to the curtailment of passenger train service and the attendant inconvenience to the traveling public, and reminding them that every passenger is, in a sense, a guest of the company; and expressing the hope that "every employee will recognize the fact that he is a representative of the host, and when off duty traveling on free transportation, if he is seated, and paying passengers are compelled to stand, will recognize the obligation due from a courteous host to his guest, and will quietly arise without attracting undue attention to his action, and make room for the paying passenger."

The Order of Railway Telegraphers has agreed to arbitrate, under the Erdman act, a pending wage dispute with the Chicago, Rock Island & Pacific. The Rock Island has selected as its arbitrators E. S. Jouett, general attorney of the Louisville & Nashville, Louisville, Ky., and C. W. Jones, general manager of the Rock Island at Des Moines, Iowa. The union has selected two arbitrators to represent its interests, and it is now in conference with the management of the Rock Island for the purpose of selecting two neutral arbitrators. The men demanded a 20 per cent cash increase in pay, an eight-hour day, various adjustments in the rules and certain vacation privileges. If their demands were granted in full the yearly telegraph payroll of the Rock Island would be increased by about $700,000.

At the recent annual meeting of the American Society for Testing Materials it was decided that the tentative standards shall be published in the proceedings as heretofore, and the executive committee was requested to take such action as it saw fit with regard to their separate publication. In accordance with this action the executive committee has decided that, in addition to the publication of the tentative standards as Part 1 of the proceedings, they will be reprinted in a separate pamphlet in a paper binding. Each of the standards will also be reprinted separately so that those who desire copies of individual standards can secure them in that form. The paper-bound book for 1917 will comprise about 325 pages, and in addition to the 60 tentative standards will contain the complete list of standards and tentative standards of the society, with a suitable index. The price of this publication has been fixed at $2 for members and $3 for non-members. The volume is expected to be available about October 15.

W. H. Chandler, manager of the Transportation Bureau of the Boston Chamber of Commerce, has written an article complaining that in the matter of freight car shortage the railroads take too little upon themselves and endeavor to throw too much burden upon shippers and consignees; and he says that the records of 694 cars received in New England show that the average time of these cars from western points to destination was 34.7 days. One car came through in six days, and one was in transit 95 days. The average time from Peoria was 48.2 days; from other Illinois points, 44 days; from Milwaukee, 50 days; from Mississippi River crossings, 64.9 days; from Minneapolis, 57.5 days.

French Railroads in Fine Trim

Secretary of War Baker in a recently issued statement has denied that there was any basis of fact for a published statement that the railroads in France had fallen into such a state of disrepair that it had become necessary for American engineers to be sent to France to take charge of their restoration. On the contrary, said Mr. Baker, all his information indicated that the commercial railroads of France were in astonishingly good condition. The nine American engineer regiments that have been sent to France, he said, were to be used in reconstruction and maintenance of military lines.

Judge Lovett Member of Purchasing Commission for Allies

W. G. McAdoo, Secretary of the Treasury, has announced the appointment of Bernard M. Baruch, Robert S. Lovett and Robert S. Brookings, members of the War Industries Board of the Council of National Defense, as members of a purchasing commission to handle all purchases for the allied British, French and Russian governments in the United States. It is expected that the other allied governments may also place their purchases in the hands of this commission. Judge Lovett is also the administrative officer, who, acting for the President, has power to give direction for priority in transportation of certain kinds or classes of freight, as may be made necessary by war conditions.

Delays in Repairing Freight Cars

Fairfax Harrison, chairman of the executive committee of the A. R. A. committee on national defense, has issued a circular, "Bulletin No. 27," calling the attention of railroad managers to the large amount of unnecessary delay in repairing foreign freight cars. When a railroad car shop repairs a freight car belonging to another road, and has to send to that other road for material, it has to bear not only the cost of the per diem charge on the car while it is waiting, but also the loss of the car in service; and in the present scarcity of cars this is a serious item. One large railroad found that there was an average delay of 14 days, from the date of its orders for material from owners, to be used on foreign cars, to the date the material was shipped; and a further delay of 31 days (average) from the time the material was shipped until it was received. These figures, very likely, may show the general average throughout the country.

Attention is called to the fact that the Master Car Builders'

rules permit the use of unstandard parts under certain conditions, provided the car can be made safe and serviceable; and the association has recommended and urged members to take advantage of this provision of the rules. Where it is necessary to use metal bolsters, large castings or other parts for which non-standard material cannot be substituted, car owners should take care to ship material with the utmost promptness.

Nine Hundred Twenty Miles on the Wing

Captain Guilio Laureami, an aviator in the Italian army, on August 28 flew from Turin to Naples and return, a distance of about 920 miles, without a stop. He left Turin at 10:07 a. m., reached Naples, flew over that city, and was back in Turin at 8:40 p. m., making an average speed of about 87 miles an hour. The previous long-distance non-stop record was held by Antoine Marchal, a French aviator, 807 miles. Miss Ruth Law flew 590 miles from Chicago to Hornell, N. Y., on November 19, 1916.

Railway Engineers in Battle with Submarine

Letters from members of the Rock Island and Illinois Central companies of the Thirteenth Engineers (Railway) United States Army indicate that the vessel which carried them to Europe had a lively battle with a German submarine shortly after the war zone was entered. In a letter to A. C. Ridgway, vice-president of the Chicago, Rock Island & Pacific, V. H. Hagelbarger, captain of the Rock Island company, wrote in part:

"Our trip so far has been uneventful except yesterday morning when we had a brush with a German submarine, but succeeded in getting away unharmed, although the skirmish was rather lively while it lasted. The men all behaved with the best of order and we were afterwards patrolled by two British destroyers, finding ourselves this morning at anchor waiting for orders."

A letter received by a relative of another member of the Rock Island company described the battle in greater detail: "Sunday at 7 A. M. a 6-in. gun was fired, followed by a 4-in. gun. I did not think of the danger we were in until a shot hit the water about 20 ft. from the left side of the boat. It was a submarine firing at us from the rear. Some of the boys claim they saw the U-boat, but the submarine was too far for me to see with the naked eye. I did see the flash from her guns, but could not hear a report. You can imagine, she was pretty far away. One of the gunners claimed that three shots went over the ship between the funnels and the bridge. The captain sent out a wireless for help and telephoned to the engine room for more speed ahead. The fight lasted 34 minutes, and during that time our gunners fired 34 shots. The 'sub' evidently fired more, for the shots hit the water all around us. At 9 and 9.15 we passed two English ships with one gun each on the stern and signalled them of the danger ahead. Between 11.30 and 12 o'clock we picked up a wireless message that one ship was sunk, but the other got away from the submarine."

Report on Collision at Irving, W. Va.

The Interstate Commerce Commission has issued a report, dated July 6, on the collision which occurred May 22 on the Baltimore & Ohio, near Irving, W. Va., between Wallace and Dola, where one employee was killed and four were injured. The collision was between a wrecking train moving east (after having attended to a derailed car), and a freight train moving west, and was due to carelessness in giving or in executing an order about flagging. The conductor of the wrecking train had sent a flagman from Dola by a preceding train, with orders, he says, to hold the westbound freight at Irving; but the freight was not held and the flagman claims that the order which he carried did not require him to hold it. The flagman held a paper containing the conductor's *second* instructions; but the conductor claims that a *third* paper had been issued. This the flagman says he did not receive. The inspector is unable to settle the question of veracity between these two men.

None of the instructions prepared by the conductor were read aloud either by the conductor or the flagman, and in issuing new instructions the former ones were not destroyed. The engineman and the pilot of the wrecking train are censured for not taking an interest in what was going on; they might have prevented the error or errors that were made.

In connection with the investigation it was found that employees were engaged under very lax methods of examination and instruction. Men were employed for train service by a trainmaster's clerk, who had himself never been examined on the rules; and the examination was very perfunctory.

The Railroads, the Public, Legislatures and the Labor Unions

[From the New York Times]

There never was such a volume of railway business moved as is moving now. There never was such a low average rate charged for the business done, in the face of rising costs surpassing all comparisons. The railways' profit is not the smallest ever known, for there have been times when railways went into receiverships by the billion dollars, but the profit is moderate compared with other profits. The mobilization of the army will be accomplished without much disturbance of the public comfort. When similar efforts are made by the railways abroad, the railways are closed to the public, in some cases for six days in a week. That inconvenience is borne because it must be. The railways propose to keep a record of their extraordinary doings and of the co-operation of the public. It will be an interesting record, and as interesting for its omissions as for its inclusions. For example, nothing will be said of the railways' indebtedness to the Governor of Pennsylvania for his veto of the repeal of the full crew bill, nor of the services of the legislature of this state [New York] in not passing a similar repealer. Twenty states have laws compelling the useless employment of 20,000 men, but there are no signs of repeal. The opposition of the unions is already registered.

The purpose of these remarks is to call attention to the fact that there is general co-operation with the railways, except by the lawmakers and the unions. The lawmakers, state and federal, show no signs of having outgrown their hostility to the railways. The unions, of course, regard the railways' difficulty as their opportunity, and will not waive their advantage for any consideration of the public good. In that the unions of this country are not singular. The cable reports the selection of the present moment to strike for the eight-hour day in England.

Prevent Fire

A patriotic duty of every American is to prevent fire, says a bulletin recently issued with the approval of the National Board of Fire Underwriters, and endorsed by the Council of National Defense. The bulletin is of interest to railway men as well as those in other lines of industries. The bulletin follows:

America at war needs every ounce of her energy and resources. It is criminal to cause hazards; it is unpatriotic to neglect them.

Here are some of the ways in which you can help:

1. Learn the factory safety rules and observe them.
2. If you discover a fire, give the alarm promptly. Do you know how to do this? Ask to be shown.
3. *Don't smoke* where it is not permitted.
4. Never drop a lighted match, cigar or cigarette; be sure that it has no spark left before throwing it away.
5. Report suspicious strangers seen about the plant.
6. If you notice any unusual smoke, the overheating of any machine, or any other accident, notify the foreman at once.
7. Carry your precautions into your own home; keep your house and yard free from rubbish, and help others to do the same.

Where would *your* job be if this plant should burn?

Help Uncle Sam. BE CAREFUL.

Railroading in Time of War

The Atchison, Topeka & Santa Fe recently sent out 125,000 letters to employees and patrons outlining the Herculean task of taking care of the country's unprecedented transportation needs and the importance of energetic co-operation by all concerned to bring about the highest efficiency possible. The circular points out that the railways were the first forces in the United States to volunteer their services to the Government for the world war and early merged their individual and competitive activities, placing them under the control of a committee of five railway executives, designated the Railroad War Board. "The War Board, as a result of the unity of action on the part of the carriers, has brought into use every available freight car in the

United States. Once a week there is a redistribution of cars among the lines which need them the most, regardless of ownership, thus eliminating waste. This has helped materially in increasing the efficiency of the service. On May 1, the country was short 140,000 cars. On August 1, the shortage had been reduced to 33,776 cars. The Santa Fe on its own lines will contribute to a further reduction of the car shortage by the purchase of 3,900 new freight cars, 55 new passenger cars and 60 new locomotives at a cost of approximately $12,000,000. Nearly all of this equipment should have been delivered, but the Santa Fe has subordinated its rights and the manufacturers are using the men and material on Government orders."

The letter commends the co-operation of shippers, making possible heavier loading of cars and a reduction in the time of loading and unloading, and concludes: "The volume of Government traffic is the heaviest ever offered, and the fact should be known that the carriers are required to handle it at about half the price paid by other patrons for the same class of service. As a public service corporation the Santa Fe has a two-fold duty to perform—to help win the war abroad, and to continue to help build up the country at home, for use after the war is over. If the exigencies of the Government require it, the entire facilities of the Santa Fe will be devoted to the service of the Government, even to the extent of cancelling all trains now serving the public; but the most resourceful prophet, looking into the future, can see no such situation. The transportation of more than 100,000 cars of material for army cantonments and the national guard camps, now in progress over the several railways, without interfering with the regular movement of traffic, is the best evidence that the carriers can discharge the duty devolving upon them in any emergency by which they may be confronted."

President Fixes Anthracite Coal Prices

Government control of the coal industry, under the terms of the food and fuel control law, was further extended on August 23 when President Wilson appointed Dr. H. A. Garfield, president of Williams College, as fuel administrator, and also announced a schedule of prices for anthracite coal, at the mines; this in addition to the prices for bituminous coal announced on August 21, and given in the *Railway Age Gazette* last week, page 355. Regulations governing the distribution of coal, which may include a regulation of the profits of retailers, are to be issued later by the fuel administrator, and a licensing system may be adopted. The margin of profit for jobbers was fixed in the President's order. Under the law the government may take over and operate any mine failing to observe the prescribed regulations. The price-fixing order provides that, effective September 1, 1917, the maximum prices per ton of 2,240 lb. on board cars at the mines for the grades and sizes of anthracite coal specified shall not exceed the prices indicated, when such coal is produced and sold by the Philadelphia & Reading Coal & Iron Company, Lehigh Coal & Navigation Company, Lehigh & Wilkes-Barre Coal Company, Hudson Coal Company, Delaware & Hudson Company, Scranton Coal Company, Lehigh Valley Coal Company, Coxe Brothers & Co., Pennsylvania Coal Company, Hillside Coal & Iron Company; Delaware, Lackawanna & Western Railroad; Delaware, Lackawanna & Western Coal Company; Susquehanna Coal Company, Susquehanna Colliers Company, Lytle Coal Company, or the M. A. Hanna Coal Company.

The grades and sizes for which the maximum prices are specified are as follows:

White Ash Grade			
Broken	$4.55	Chestnut	$4.80
Egg	4.45	Pea	4.00
Stove	4.70		
Red Ash Grade			
Broken	$4.75	Chestnut	$4.90
Egg	4.65	Pea	4.10
Stove	4.90		
Lykens Valley Grade			
Broken	$5.00	Chestnut	$5,30
Egg	4.90	Pea	4.35
Stove	5.30		

Producers of anthracite coal who are not specified shall not sell the various grades and sizes of anthracite coal at prices that exceed by more than 75 cents per ton of 2,240 pounds, free on board cars at the mines, the prices enumerated; provided, that any producer of anthracite coal who incurs the expense of rescreening it at Atlantic or lake ports for shipment by water may increase the price thereof by not more than 5 cents per ton of 2,240 pounds.

Producers named shall not sell anthracite coal to producers of anthracite coal not specified.

Dealers and selling agents shall not sell coal produced by the producers named on the basis of the prices fixed at the mine for coal produced by the producers not specified.

The prices fixed are based on investigations as to the cost of production conducted by the Federal Trade Commission, which has also been conducting investigations as to the cost of iron and steel, lumber and other commodities, with a view to further regulations. They are approximately the same as have been charged by the companies after conferences with the trade commission.

Railway Signal Association

The business of the annual meeting of this association, to be held at Atlantic City, September 18 and 19, consists wholly of the discussion of reports of committees, which reports have already been tentatively presented at previous meetings, and most of which now contain recommendations for final action by letter ballot. The first committee to be heard is the special committee on harmonizing of specifications, and the others are to be heard in the following order: Committee No. 2, mechanical interlocking; No. 3, power interlocking; No. 6, standard designs; No. 10, storage battery; No. 1, signaling practice; No. 7, direct current relays; No. 8, electric railways and alternating current signaling; special committee on electrical testing; No. 5, maintenance and operation; special committee on lightning protection.

Committee No. 1 does not recommend any definite action at the present time. Committee No. 2 reports on field construction of pipe lines, and on locking switches mechanically at interlocking plants. Committee No. 3 presents a specification for petroleum asphaltum. Committee No. 5 presents a set of instructions for maintenance of alkaline storage batteries. Committee No. 6 presents 26 drawings, 7 of which are new designs, and also a specification for hand lantern globes. Committee No. 7 will present matter concerning the resistance of track relays as set forth in the Journal for March and for May; also a table showing minimum safe resistance between battery and track. Committee No. 8 will present five unit specifications, which were discussed at the June meeting; also descriptions of a number of installations of alternating current signaling. Committee No. 10 will present a specification for lead type stationary storage battery for signaling; general specifications for switchboard, and a drawing of a thermometer. The committee on harmonizing specifications will present a revised statement of the matter which has been discussed at the previous meetings this year, and will propose that the harmonized sections and paragraphs be approved for reference to letter ballot. The committee on lightning protection will present a specification for made ground apparatus. The committee on electrical testing will present a specification for ranges and scales for direct current electrical instruments; a track circuit chart and a ballast and rail resistance test chart.

Association of American Railway Accounting Officers

The secretary of the Association of American Railway Accounting Officers has recently announced that the next meeting of the association will be held at the Congress hotel, Chicago, on September 26.

MEETINGS AND CONVENTIONS

The following list gives names of secretaries, dates of next or regular meetings and places of meeting of those associations which will meet during the next three months. The full list of meetings and conventions is published only in the first issue of the Railway Age Gazette for each month.

American Association of Passenger Traffic Officers.—W. C. Hope, C. R. R. of N. J., 143 Liberty St., New York. Next meeting, October 16-17, St. Louis.

American Railway Bridge and Building Association.—C. A. Lichty, C. & N. W., Chicago. Next convention, October 16-18, 1917, Chicago.

American Society of Civil Engineers.—Chas. Warren Hunt, 220 W. 57th St., New York. Regular meetings, 1st and 3d Wednesday in month, except July and August, 220 W. 57th St., New York.

Association of American Railway Accounting Officers.—E. R. Woodson, Rooms 1116-8 Woodward Bldg., Washington, D. C. Next meeting, September 26, Congress Hotel, Chicago.

ASSOCIATION OF MANUFACTURERS OF CHILLED CAR WHEELS.—George W. Lyndon, 1214 McCormick Bldg., Chicago. Semi-annual meeting with Master Car Builders' Association.

ASSOCIATION OF RAILWAY CLAIM AGENTS.—Willis H. Failing, Terminal Station, Central of New Jersey, Jersey City, N. J.

CANADIAN RAILWAY CLUB.—James Powell, Grand Trunk, P. O. Box 7, St. Lambert (near Montreal), Que. Regular meetings, 2d Tuesday in month, except June, July and August, Windsor Hotel, Montreal, Que.

ASSOCIATION OF RAILWAY TELEGRAPH SUPERINTENDENTS.—W. L. Connelly, Supt. of Telegraph, Indiana Harbor Belt, Gibson, Ind. Next annual meeting to have been held September 18, 1917, Washington, D. C., indefinitely postponed.

CANADIAN SOCIETY OF CIVIL ENGINEERS.—Clement H. McLeod, 176 Mansfield St., Montreal, Que. Regular meetings, 1st Thursday in October, November, December, February, March and April. Annual meeting, January, Montreal.

CAR FOREMEN'S ASSOCIATION OF CHICAGO.—Aaron Kline, 841 Lawlor Ave., Chicago. Regular meetings, 2d Monday in month, except June, July and August, Hotel La Salle, Chicago.

CENTRAL RAILWAY CLUB.—H. D. Vought, 95 Liberty St., New York. Regular meetings, 2d Friday in January, May, September and November. Annual dinner, 2d Thursday in March, Hotel Statler, Buffalo, N. Y.

CHIEF INTERCHANGE CAR INSPECTORS' AND CAR FOREMEN'S ASSOCIATION.—W. R. McMunn, New York Central, Albany, N. Y. Next convention, September, 1917, St. Louis.

CINCINNATI RAILWAY CLUB.—H. Boutet, Chief Interchange Inspector, Cin'ti Rys., 101 Carew Bldg., Cincinnati. Regular meetings, 2d Tuesday, February, May, September and November, Hotel Sinton, Cincinnati.

ENGINEERS' SOCIETY OF WESTERN PENNSYLVANIA.—Elmer K. Hiles, 568 Union Arcade Bldg., Pittsburgh, Pa. Regular meetings, 1st and 3d Tuesday, Pittsburgh, Pa.

GENERAL SUPERINTENDENTS' ASSOCIATION OF CHICAGO.—A. M. Hunter, 321 Grand Central Station, Chicago. Regular meetings, Wednesday, preceding 3d Thursday in month, Room 1856, Transportation Bldg., Chicago.

INVESTMENT BANKERS' ASSOCIATION OF AMERICA.—Frederick R. Fenton, 11 W. Monroe St., Chicago. Annual convention, October 1-3, 1917, Baltimore, Md.

MAINTENANCE OF WAY AND MASTER PAINTERS' ASSOCIATION OF THE UNITED STATES AND CANADA.—F. W. Hager, Fort Worth & Denver City, Fort Worth, Tex. Next convention, October 16-18, 1917, Cleveland, Ohio.

MASTER CAR AND LOCOMOTIVE PAINTERS' ASSOCIATION OF THE UNITED STATES AND CANADA.—A. P. Dane, B. & M., Reading, Mass. Next annual meeting, September 11, Chicago.

NATIONAL ASSOCIATION OF RAILWAY COMMISSIONERS.—Jas. B. Walker, 120 Broadway, New York City. Next annual convention, October 16, 1917, Washington, D. C.

NEW ENGLAND RAILROAD CLUB.—W. E. Cade, Jr., 683 Atlantic Ave., Boston, Mass. Regular meeting, 2d Tuesday in month, except June, July, August and September, Boston.

NEW YORK RAILROAD CLUB.—Harry D. Vought, 95 Liberty St., New York. Regular meeting, 3d Friday in month, except June, July and August, 29 W. 39th St., New York.

NIAGARA FRONTIER CAR MEN'S ASSOCIATION.—Geo. A. J. Hochgrebe, 623 Brisbane Bldg., Buffalo, N. Y. Meetings, 3d Wednesday in month, New York Telephone Bldg., Buffalo, N. Y.

PACIFIC RAILWAY CLUB.—W. S. Wollner, Assistant to Chief Engineer, Northwestern Pacific R. R., San Francisco, Cal.

PEORIA ASSOCIATION OF RAILROAD OFFICERS.—F. C. Stewart, 410 Masonic Temple Bldg., Peoria, Ill. Regular meetings, 3d Thursday in month, Jefferson Hotel, Peoria.

RAILROAD CLUB OF KANSAS CITY.—Claude Manlove, 1008 Walnut St., Kansas City, Mo. Regular meetings, 3d Saturday in month, Kansas City.

RAILWAY CLUB OF PITTSBURGH.—J. B. Anderson, Room 207, P. R. R. Sta., Pittsburgh, Pa. Regular meetings, 4th Friday in month, except June, July and August, Pittsburgh Commercial Club Rooms, Colonial-Annex Hotel, Pittsburgh.

RAILWAY FIRE PROTECTION ASSOCIATION.—C. B. Edwards, office of the president's assistant, Seaboard Air Line, Norfolk, Va. Next meeting, October 2-4, 1917, St. Louis, Mo.

RAILWAY REAL ESTATE ASSOCIATION.—R. H. Morrison, Assistant Engineer, C. & O., Richmond, Va. Next convention, October, 1917, Duluth, Minn.

RAILWAY SIGNAL ASSOCIATION.—C. C. Rosenberg, Myers Bldg., Bethlehem, Pa. Next annual convention, September 18-19, 1917, Hotel Traymore, Atlantic City, N. J.

RICHMOND RAILROAD CLUB.—F. O. Robinson, C. & O., Richmond, Va. Regular meetings, 2d Monday in month, except June, July and August.

ROADMASTERS' AND MAINTENANCE OF WAY ASSOCIATION.—P. J. McAndrews, C. & N. W., Sterling, Ill. Next annual convention, September 18-21, 1917, Hotel Auditorium, Chicago.

ST. LOUIS RAILWAY CLUB.—B. W. Frauenthal, Union Station, St. Louis, Mo. Regular meetings, 2d Friday in month, except June, July and August, St. Louis.

SIGNAL APPLIANCE ASSOCIATION.—F. W. Edmunds, 3868 Park Ave., New York. Meetings with annual convention Railway Signal Association.

SOUTHERN & SOUTHWESTERN RAILWAY CLUB.—A. J. Merrill, Grand Bldg., Atlanta, Ga. Regular meetings, 3d Thursday, January, March, May, July, September, November, 10 a. m., Piedmont Hotel, Atlanta.

TRAFFIC CLUB OF CHICAGO.—W. H. Wharton, La Salle Hotel, Chicago.

TRAFFIC CLUB OF NEW YORK.—C. A. Swope, 291 Broadway, New York. Regular meetings, last Tuesday in month, except June, July and August, Waldorf-Astoria Hotel, New York.

TRAFFIC CLUB OF PITTSBURGH.—D. L. Wells, Gen'l Ag't, Erie R. R., 1924 Oliver Bldg., Pittsburgh, Pa. Meetings bi-monthly, Pittsburgh.

UTAH SOCIETY OF ENGINEERS.—Frank W. Moore, 1111 Newhouse Bldg., Salt Lake City, Utah. Regular meetings, 3d Friday in month, except July and August, Salt Lake City.

WESTERN CANADA RAILWAY CLUB.—L. Kon, Immigration Agent, Grand Trunk Pacific, Winnipeg, Man. Regular meetings, 2d Monday, except June, July and August, Winnipeg.

WESTERN RAILWAY CLUB.—J. W. Taylor, 1112 Karpen Bldg., Chicago. Regular meetings, 3d Monday in month, except June, July and August, Hotel Sherman, Chicago.

WESTERN SOCIETY OF ENGINEERS.—Edgar S. Nethercut, Acting Secretary, 1735 Monadnock Block, Chicago, Ill. Regular meeting, first Monday in month, except January, July and August. Extra meetings generally on other Monday evenings except in July and August.

Traffic News

F. A. Lallier, hitherto connected with the Houston (Texas) Chamber of Commerce, has been appointed traffic manager of the Galveston Commercial Association.

The railroads of Wisconsin filed an application before the Railroad Commission of that state on August 16, asking for authority to make an increase of 15 cents a ton in coal and coke rates.

The New York, New Haven & Hartford has filed with the Public Utilities Commission of Rhode Island a proposal to increase local freight rates applying on shipments within that state 15 per cent.

The State Public Utilities Commission of Illinois will hold a hearing at Chicago on September 4 to consider the application of the railroads for a reduction of free time to be allowed for loading and unloading open top cars from 48 hours to 24 hours, and the abolition of free time in connection with the reconsignment of such cars.

The Public Service Commission of Indiana, the State Public Utilities Commission of Illinois and the Public Utilities Commission of Ohio, held a joint conference at Indianapolis, Ind., on August 23, to consider the application of the railroads for an increase of 15 cents a ton in freight rates on coal and coke. No joint action by these commissions will follow this conference, but each will issue separate orders on the basis of the evidence presented before each commission. It was also decided at the conference to appoint a committee composed of one member of each commission to discuss class and commodity rates, other than those covering coal and coke, where there appears to be discrimination as between the various states.

Car Conservation in the Concrete

Penick & Ford, of New Orleans, wholesale dealers in molasses, are reputed to be pioneers in double loading of freight cars, and in the month of May last their average carload was 9,706 lb., or 20 per cent, heavier than in May, 1916; and this means the average per shipment, not the average per car. "Double loading," as most of our readers know, means to make one actual carload out of two "carloads" as defined by the freight classification. For example, the tariff may say that the carload rate applies to any shipment of 20 tons or over; but if the car which is provided for the load will hold 40 tons, and if there are two shipments of 20 tons each, destined to the same point, the shipper can put the whole into a single car.

The increase above noted marks the culmination of a fine record in this respect at Penick & Ford's establishment since the beginning of this year. This concern also has made a marked improvement in the prompt loading and unloading of cars; and the firm's traffic manager has issued a circular, printed in red, white and blue, giving some of the figures. In January, 1917, 93 per cent of the cars loaded or unloaded were released before the expiration of free time; and one-sixth of these cars were released before the *beginning* of the free time. Similar good records were made in following months, and in April no less than 26 per cent of the cars were released before the beginning of the free time. For example, in the case of a car arriving on Monday at noon, and on which the demurrage record, including the free time, would not begin until 7 a. m. of Tuesday, the load was completely discharged on Monday afternoon.

This circular reports the average detention per car at the New Orleans plant of Penick & Ford as follows: January, one day; February, two-thirds of a day; March, one and one-fourth days; April, one-half day; May, one and one-fourth days. The circular says:

"This is not a boast, simply a statement of where we stand. We hope to improve the record. What is your record Messrs. Shipper and Railroad man?"

Commission and Court News

INTERSTATE COMMERCE COMMISSION

A hearing was held before the suspension board of the Interstate Commerce Commission at Washington on August 28, on protests of the livestock shippers and packers against the proposed advance of approximately 15 per cent in the rates on livestock and dressed meats east of the Mississippi river, which is the first to be considered of a considerable number of proposed advances in commodity rates filed by the roads just prior to August 15, under the blanket approval given by the commission for the filing of tariffs up to that date.

The commission has issued the tentative report of its examiner on the proposed tariff, reducing from five days to two the free time allowed for holding domestic freight at New York for unloading. This tentative report approves the reduction. The commission has not yet passed upon the report nor approved the findings. The proposal to increase storage charges on both export and domestic shipments not handled within the proposed two days free time limit also was tentatively approved in the report. The proposal to reduce the free time of 15 days allowed for handling export shipments at North Atlantic ports and the free time of 10 days allowed at Gulf ports to five days is not approved.

The commission is now making public, by placing copies on the press table in the secretary's office, notices giving approval for the filing of tariffs, as required by the amendment to section 15 of the act, which became effective on August 9. When a railroad or a tariff issuing agency now desires to file a tariff containing an increased rate, it is necessary to file with the commission an application giving an explanation of the proposed increase and the reasons for it. Of the first five applications filed the commission had approved two up to Tuesday of this week, the other three being still under consideration. The notices state that a petition for approval of the tariff having been filed, the tariff is approved for filing without formal hearing, which approval shall not affect any subsequent proceeding relative thereto.

COURT NEWS

Improper Use of Brake Beam by Switchman

The Texas Supreme Court holds that negligence cannot be predicated on a railroad's failure to make a brake beam safe for a switchman to step on as the car approaches him.—Freeman v. Garretts (Tex.), 196 S. W., 506. Decided June 30, 1917.

Passes to Employees

The Massachusetts Supreme Judicial Court has issued a decision on the rule that, where a pass is issued to an employee as one of the terms of his employment, the clause by which the recipient assumes the risk of accident is not binding. The rule is held to be not changed by the Massachusetts statute of 1913 as amended in 1914, prohibiting free transportation, but permitting free or reduced rate service to employees, etc.—Palmer v. B. & M. (Mass.), 116 N. E., 899. Decided June 28, 1917.

Setting Fires by Sparks—Evidence

In an action against a railroad for destruction of property by fire, the Alabama Supreme Court holds that the defendant's evidence showing that its engine was properly constructed and equipped, in good repair, and properly operated and managed, was a complete defense unless the showing was contradicted, as by evidence that the sparks emitted on the occasion were of unusual size or in unusual quantities, or were thrown to an unusual distance, in which case it would be for the jury to say whether the construction, equipment, repair and management were proper and sufficient. Where the engine was pulling a heavy load up grade, it was held that a witness' statement that it emitted an unusual quantity of sparks, as compared with other engines, as observed by him, was not prima facie relevant, and should have been excluded.—L. & N. v. Davis (Ala.), 75 So., 977. Decided May 10, 1917.

Hiring at Will for Deed of Right of Way

The Arkansas Supreme Court holds that a railroad's contract, in consideration of a right of way deed, to give the grantor a position as brakeman at regular work and a named salary, being for an indefinite period, was terminable at the will of either party, and a hiring for any substantial length of time and refusal to give employment for a further time, did not constitute breach by the railroad.—Ashley, Drew & Northern v. Cunningham (Ark.), 196 S. W., 789. Decided June 11, 1917.

Rates for Disinfecting Stock Cars

In proceedings before the Illinois Public Utilities Commission to fix rates for cleaning live stock cars, it appeared that the disinfecting of cars as required by the state board of live stock commissioners necessitated a detention of the car for one day and a charge of 45 cents for one day's detention was reasonable and customary. The Illinois Supreme Court held that the commission should have included such charge in the rates fixed by it.—Commission v. Atchison, T. & S. F. (Ill.), 116 N. E., 696. Decided June 21, 1917.

Free Passes—Stipulation Against Liability for Accident

Following the decision in Ft. Wayne & Wabash Valley Traction Co. v. Justus, 115 N. E., 585, the Indiana Appellate Court holds that a pass issued by the defendant railroad to deceased, an officer of another railroad, in exchange for passes issued by his road to officers of the defendant, as authorized by the Indiana statute of 1914, is a free pass or gratuity, so that a provision therein that he should assume the risk of accident is binding, preventing recovery for his death while riding thereon, unless caused wilfully.—Mitten v. Delano (Ind.), 116 N. E., 744. Decided June 29, 1917.

Insufficient Evidence of Negligence

In an action for personal injuries it was alleged that while the plaintiff was walking on a well marked path alongside the track a train passed him at high speed, sucking him against or under the cars. The Georgia Court of Appeals held the railroad not liable. Either the happening was likely to occur, in which case a man of ordinary prudence would be bound to guard against it; or it was unusual and extraordinary, and the men in charge of the train could not be expected to anticipate it.—Southern v. Young (Ga.), 93 So., 51. Decided June 27, 1917.

Corporation Excise Tax—"Income"

The Circuit Court of Appeals, Sixth Circuit, holds that where a railroad company bought stock in another company prior to January 1, 1909, for investment, and not for sale, but sold such stock at a profit subsequent to January 1, 1909, such profit was not "income," within the Corporation Tax Law of 1909, except to the extent that the selling price exceeded the ascertained market value on January 1, 1909; but to that extent the selling price constituted income, it appearing that the stock had a well-understood stock market value. The word "income," in the Corporation Tax Law, imposing an excise tax measured by income, means the same as in prior laws imposing a tax on income.—Cleveland C. C. & St. L., 242 Fed., 18. Decided May 8, 1917.

Liability of Railroad and Hospital Association for Refusal to Give Treatment

Suit was brought by a railroad employee against the railroad and a hospital association connected therewith for failure to furnish medical and surgical treatment for the plaintiff's thumb, injured in the railroad's machine shop. The railroad deducted from the plaintiff's wages a certain percentage as hospital fees, which it turned over to the hospital association, a separate and distinct corporation, from which the railroad received no profits. The deductions thus made entitled the employees to medical

treatment in the hospital. On the back of each check to the plaintiff for wages was an indorsement, below which he always signed, to the effect that deduction for hospital fees was made with the express understanding that the sole obligation of the railroad was to pay over the money to the association. The plaintiff applied to one of the surgeons for treatment, which was refused. The Texas Court of Civil Appeals held that the railroad was not liable for the damage resulting to the plaintiff.

The original contributors to the hospital fund agreed with each other that the fund should be used for the sole purpose of treating and caring for [contributors]; and the court held that the use of the funds to satisfy this claim would be in violation of the agreement.—Davis v. G. C. & S. F. (Tex.), 196 S. W., 603. Decided May 12, 1917.

Crossing Accident—Contributory Negligence of Automobile Passenger

The Nebraska Supreme Court holds that one who by invitation rode in an automobile driven by another and remained in it, with knowledge that it was approaching a dangerous railroad crossing without requesting the driver to stop or to take other necessary precautions to avoid danger, though, if he had looked and listened, there was time to induce the driver to stop or to jump out of the car, was guilty of contributory negligence, and cannot recover for personal injuries sustained from colliding with a passing train, even though no signal by the locomotive bell or whistle was given.—Morris v. C. B. & Q. (Neb.), 163 N. W., 799. Decided July 3, 1917.

Leaky Valve—Assumed Risk

The South Dakota Supreme Court holds that a plaintiff railroad employee's testimony that an engine valve was leaky and that he was scalded by hot water and steam suddenly escaping does not establish the defendant railroad's negligence, where the cause of the leak is unexplained. The plaintiff employee had the burden of showing the defendant employer's negligence proximately causing the injury. If injury from escaping steam could reasonably be anticipated from a leaky valve, the plaintiff employee assumed the risk incident to such defect when he used the engine knowing its condition and that it could not be remedied until the engine reached another point.—Lee v. Great Northern (S. Dak.), 116 N. E., 560. Decided June 26, 1917.

Fuel Consumption of Canadian Railways.—The consumption of fuel of all kinds by locomotives on Canadian railways increased from 5,608,954 tons in the year ended June 30, 1907, to 8,995,123 tons in the year ended June 30, 1916. The average cost per ton in the last statistical year was $3.11, against $3.02 for the immediate previous year.

German Coal Yield Cut 1,000,000 Tons.—Strikes of miners in Silesia during the month of July reduced the German production of coal by more than 1,000,000 tons, according to statements made in the debate in the Reichstag Main Committee on the fuel problem. Vice-Chancellor Helfferich gave an urgent and earnest warning against further strikes.

By Water Instead of Rail.—To further the government plan of conserving railroad rolling stock, the Keystone Steel & Wire Company, of Peoria, Ill., of which W. H. Sommer is president, has experimented with moving its product by water. It has transported 1,200 tons of pig iron over 681 miles from Sheffield, Ala., to Peoria, almost entirely by water. The officials believe that this is the longest inland movement of pig iron made by water by any single manufacturer. The government took a deep interest in the matter, loaning some necessary machinery for loading the iron. It has not been determined whether this is a cheaper way of transportation.

British Railwaymen's Fifth Bonus.—It is announced that the railwaymen's war bonus of 15s. ($3.60) per week for men and 7s. 6d. ($1.80) for youths is in future to be reckoned as wages. This will be of benefit to the men in that payments for overtime and Sunday duty will be calculated at the higher rate that includes the bonus amount. It is expected that the same concession will be made to the shopmen. This is the fifth increase in pay made to the railway men since the war commenced, three years ago.—*The Engineer, London.*

Equipment and Supplies

LOCOMOTIVES

The Minneapolis & St. Louis is trying to secure space for 5 Pacific and 20 Mikado or Santa Fe locomotives.

The New York, New Haven & Hartford has ordered five electric locomotives from the Westinghouse Electric & Manufacturing Company, and it is understood will soon buy 15 more.

The American Railroad of Porto Rico has ordered 3 compound Consolidation locomotives from the American Locomotive Company. These locomotives will have 14 and 20 by 20-in. cylinders, and a maximum tractive effort of 15,000 lb.

FREIGHT CARS

The Inland Steel Company has ordered 72 50-ton general service cars and 35 50-ton hopper cars from the Bettendorf Company, Bettendorf, Iowa.

SIGNALING

The Kansas City Terminal has given a contract to the Union Switch & Signal Company for a 15-lever frame electro-pneumatic interlocking machine at High Line Junction.

For the Pennsylvania Lines West the Union Switch & Signal Company will install a mechanical interlocking at Hawthorne, Ind.; 4 switch levers, 10 signal levers and 5 levers for facing point locks.

The Philadelphia, Baltimore & Washington has placed an order with the Union Switch & Signal Company for a 23-lever electro-mechanical interlocking machine at Harrington, on the Delaware division.

The Central of Georgia is to extend its automatic block signal territory in the vicinity of Macon, Ga. Seventeen 1-arm and one 2-arm Style "S," double case, low voltage, ground signals, and other necessary material have been ordered from the Union Switch & Signal Company.

The Norfolk & Western has awarded a contract to the Union Switch & Signal Company for the extension of the signaling on the electrified division near Welch, Va. Thirteen 1-arm, 3-position, Style "S" bridge signals will be installed. Centrifugal relays of the 2-element type will be furnished for the track circuits; and vane type line relays.

The Pennsylvania has ordered from the Union Switch & Signal Company two interlocking machines for the Philadelphia Terminal division; at Twenty-second street an 83-lever frame Model 14 electro-pneumatic, and at Delaware avenue and Vandalia street a 19-lever type "F" electric interlocking; also on the Pittsburgh division an electro-pneumatic machine at Bennington, Pa., with a 23-lever frame.

Chinese Railways Seek Motor Cars.—Consul N. T. Johnson, at Changsha, China, requests that catalogues describing and quoting prices on small motor-driven inspection cars, such as are used on railway lines by engineers for inspecting track or roadbed, be sent to the consulate. Information concerning small 1-passenger or 2-passenger cars is wanted. The cars should be driven by kerosene motors rather than gasoline, if possible.

Amalgamation of Siam's State Railways.—The Siamese Northern and Southern Railways, which up to the present time have been under separate management, have now been placed under a commissioner general of State Railways, and at the same time Henry Gittins, controlling engineer of the Southern line, has been appointed adviser to the new office. The Prince of Kambeng Bejra, who about two years ago made an extended visit to the United States, has been appointed commissioner general of the amalgamated railways.—*Commerce Report.*

Supply Trade News

The Railway Specialties Corporation has moved its office to larger quarters at 30 Church street, New York.

W. S. Spieth has been appointed manager of the Davis wheel department of the American Steel Foundries, with office at Chicago, to succeed F. A. Lorenz, Jr., who has resigned to go into other business.

The Lipman Refrigerator-Car & Manufacturing Company, Beloit, Wis., has commenced the construction of a foundry, tank and welding shops and an office building in that city, and will soon commence work on car sheds and other buildings. The initial expenditure will be about $50,000.

Edward C. Fisher, manager of the Cooke Works of the American Locomotive Company since September 26, 1916, has been transferred from Paterson, N. J., to become manager of the American Locomotive Company's plant at Pittsburgh, Pa. A sketch and photograph of Mr. Fisher appeared in the *Railway Age Gazette* of September 29, 1916, page 569.

The American Car & Foundry Company has leased for five years a half of the 17th floor of the Hudson Terminal building, 30 Church street, New York, and will consolidate its New York and St. Louis offices there. At present the company has New York offices at 165 Broadway, but could not obtain sufficient space in that building to provide for the departments that will be moved to New York from St. Louis.

The Walter A. Zelnicker Supply Company, St. Louis, Mo., has recently secured the service of J. C. Bryan, formerly with Manning, Maxwell & Moore, Inc., as that company's southwestern representative of the Ashcroft Manufacturing Company, the Consolidated Safety Valve Company, the Hayden & Derby Manufacturing Company, and the Hancock Inspirator Company. Mr. Bryan will be associated with the equipment department of the Zelnicker company.

American Locomotive Company

If there is one thing in the recently issued annual report of the American Locomotive Company that shows what has been going on in the equipment market in the last few months, it is the statement that the total unfilled orders on June 30, 1917, amounted to $77,620,449, as compared with $19,376,532 on June 30, 1916. The American Locomotive Company completed its munitions work, which was being done at its Richmond and Montreal plants, this month. The amount of munitions orders which were uncompleted on June 30, 1917, was only $3,566,528.

The gross earnings of the company in the fiscal year ended June 30, 1917, were $82,000,000, as against $59,000,000 in 1916. The increased cost of operation, however, was such that the profits on the year's business were only $7,000,000, as compared with nearly $11,000,000 in 1916. Dividends were declared in 1917 amounting to $3,350,000, including 7 per cent on the preferred stock, 5 per cent on the common stock, and the special Red Cross dividend of one per cent on the common stock. This left a surplus of $4,000,000, as compared with $9,000,000 in 1916. From this surplus there was deducted a reserve for additions and betterments amounting to $2,000,000, whereby the net credit to profit and loss in the year's business was $2,000,000, making the surplus at the close of the year $16,000,000.

Chairman, Sylvanus L. Schoonmaker in his annual report to the stockholders of the company, says in part:

"During the year prices of materials of all kinds increased to an unprecedented degree; a great scarcity of both skilled and unskilled labor existed, notwithstanding that large increases in wages were made and the working time of the shops shortened. These abnormal operating conditions, which could not be fully anticipated, affected the profits on both locomotives and munitions.

"Both in Canada and the United States, the selling prices on munitions were reduced to lower levels than prevailed in the preceding year and the new contracts for shells admitted, even under normal conditions, of a much smaller margin of profit than previous contracts allowed. The new contracts were for larger shells than those previously made, and necessitated large additions of equipment and extensive alterations to plants, for which the sum of $3,760,561.49 has been included in the manufacturing cost and deducted from earnings.

"The munitions work at Richmond and Montreal will be completed in August, 1917. The work of restoring these plants to locomotive production uses has already been started, and when completed the entire capacity of all of the plants of the company will be devoted exclusively to the manufacture of locomotives, which are urgently needed abroad as a war necessity, and also by the railroads of this country.

"As a part of the plan of restoring the Richmond plant, and with the purpose of obtaining an immediate increase in the foundry capacity of that plant for locomotive work, the company purchased on June 25, 1917, the land and buildings of the Henrico Iron Works Corporation at Richmond, Va., suitable, with improvements which can be quickly installed, for making locomotive gray iron castings. As a part of the purchase price of the Henrico property, your company assumed an outstanding mortgage of $25,000, represented by an issue of the Henrico Iron Works Corporation of first mortgage 6 per cent gold bonds maturing August 15, 1919, which cannot be retired prior to maturity.

"It is the purpose of the management to manufacture as much of the material entering in large quantities into the construction of locomotives, as can be produced by the company to economic advantage. In accordance with this policy, the company purchased on July 2, 1917, from the Penn Seaboard Steel Corporation, a modern steel casting plant at Chester, Pa., known as the Seaboard Works. As a part of the terms of purchase your company acquired the full working organization of the Seaboard plant, which has continued to operate without cessation, and its entire output is now being used for the company's locomotive work.

"The company subscribed for $1,000,000 of the issue of United States Liberty Loan Bonds of 1917, of which $500,000 was in anticipation of subscriptions to be made through the company by its employees. Because of the country-wide oversubscription of the loan, the company's final allotment was $612,500. Out of this allotment 7,867 of the company's employees purchased $535,850 of such bonds to be paid for in weekly and monthly installments over a period of 50 weeks. The remainder of the bonds, amounting to $76,650, are carried by the company as an investment."

The general balance sheet follows:

Assets		
Cost of property (less depreciation reserves)		$47,138,127
Sundry securities owned		908,328
Current assets—		
Cash on hand and in banks	$4,710,572	
Accounts and bills receivable	12,025,332	
Liberty Loan Bonds 1917—Subscribed by employees (less installment payments)	497,387	
Accrued interest	3,959	
Materials and supplies	7,306,337	
Contract work in course of construction	11,169,751	
Locomotives and parts in stock	120,387	
		35,833,725
Sundry deferred charges		226,243
		$84,106,423
Liabilities		
Capital stock—		
Preferred	$25,000,000	
Common	25,000,000	
		$50,000,000
Bonded debt of constituent companies—		
Locomotive and Machine Company of Montreal, Limited	$1,500,000	
Richmond Locomotive & Machine Works	432,000	
Henrico Iron Works Corporation	25,000	
		1,957,000
Current liabilities—		
Accounts payable	$4,424,079	
Income tax withheld at source	2,137	
Unclaimed interest and dividends	2,961	
Gold coupon notes outstanding, due July 1, 1917	1,336,000	
Loans payable	1,000,000	
Subscriptions to Liberty Loan Bonds—1917	516,800	
Sundry accrued expenses, including accruals for United States and Canadian income and war taxes	2,719,684	
Dividend on preferred stock payable July 21, 1917	437,500	
Dividend on common stock payable July 2, 1917	312,500	
Red Cross dividend on common stock payable July 25, 1917	250,000	
		11,001,661
Reserve for restoration of munitions plants and other contingencies		1,507,796
Reserve for additions and betterments		3,722,597
Balance June 30, 1916	$13,965,689	
Add—Surplus as shown in condensed income account	1,951,680	
		15,917,369
		$84,106,423

Railway Construction

CANADIAN PACIFIC.—This company is increasing the capacity of its West Toronto yards from 1,700 to 2,200 cars, and revising the layout so as to eliminate conflicting movements. The Runnymede Road subway through the center of the yard, which now has a six-track steel superstructure, is being extended for six additional tracks with a reinforced concrete superstructure. The subway was excavated, and the abutments and the retaining walls built for a total of 12 tracks when the subway was originally constructed. All grading and track work is being done by the company's forces, and the Runnymede Road subway superstructure is being built by Archibald & Holmes, Ltd., Toronto.

Work has also been started recently on double tracking the line between Leaside, on the North Toronto subdivision, and North Toronto, about two miles distant. The grading is comparatively light, and this, together with all track work, will be handled by the company's forces. In connection with this work the company is removing two single track steel viaducts, and replacing them with reinforced concrete construction. Each is about 400 ft. long, and has a maximum height of approximately 100 ft. from base of rail to ground line. The one at mileage 0.9 over the Belt Line Ravine will be replaced by a two-track, and that at mileage 1.8 over the reservoir Park Ravine by a three-track structure. It is hoped to have the work completed by the end of November in order that it may be ready to handle next winter's traffic. The contract for bridge 0.9 has been let to the Dominion Construction Company, Ltd., and for bridge 1.8 to Wells & Gray, Ltd., both of Toronto.

ILLINOIS CENTRAL.—This company has completed plans for the construction of a brick freight house at Grand Crossing (Chicago). The structure will be 30 ft. wide by 200 ft. long, with wood block floor and slate roof, and will cost approximately $70,000.

Plans have also been completed for an addition to the passenger station at Paducah, Ky., which will be 56 ft. by 22 ft., of brick construction with a slate roof, and will contain a lunch room and kitchen. The plans also provide for the installation of toilets in the depot and the construction of a frame canopy, averaging about 30 ft. in width, around the building, which will be about 250 ft. long. The work will cost about $10,000.

A contract has been awarded to George B. Swift & Co., Chicago, for the construction of a freight house at Kankakee, Ill., to cost about $20,000. The building will be 37 ft. by 128 ft., 60 ft. of which will be two stories in height. The structure will have brick walls, a slate roof and wood block floors (July 6, page 43).

A contract has been awarded to T. S. Leake & Co., Chicago, for the enlargement of mechanical facilities at Clinton, Ill. (May 18, page 1076).

W. J. Zitterell, Webster City, Iowa, has been awarded the contract for the construction of a freight house at Ft. Dodge, Iowa, to cost about $25,000 (June 15, page 1260).

A contract has been awarded to Kehn Bros., Chicago, for the installation of heating facilities at the Burnside (Chicago) shops, to cost about $5,000.

MIDLAND & NORTHWESTERN.—This company is erecting a station at Midland, Tex., to cost about $5,500, the work being done by C. K. Stark. The grading for the road, which will extend from Midland, Tex., to Seminole, 65 miles, has been completed, and 48 miles of track have been laid. It is the intention ultimately to extend the line from Seminole to Roswell, N. M., 130 miles further. T. J. O'Donnell, president, Midland, Tex. (February 23, page 337).

MISSOURI, KANSAS & TEXAS.—This company will construct a new main line approximately two miles in length around the east side of its present yard at Muskogee, Okla., and a 2,500-ft. second main line out of the station. It will also rearrange and extend yard tracks, with a total cost of all improvements of about $80,000.

NEVADA-CALIFORNIA-OREGON.—This road is erecting an administration building, a roundhouse, a machine shop and other minor buildings at Alturas, Cal., the cost of which, including real estate and necessary trackage, will aggregate about $75,000.

NEW MEXICO LINE.—New Mexican interests are contemplating the construction of a railroad from Holbrook, N. M., 70 miles south into a timber belt lying in the government forest preserve.

NEW YORK, NEW HAVEN & HARTFORD.—Company forces are now at work on a new 18-stall brick, concrete and hollow tile roundhouse at Cedar Hill yard just east of New Haven. The roundhouse will be about 98 ft. wide, 488 ft. long, and will cost about $141,000.

PEARL RIVER VALLEY.—This company has been chartered to build a railroad from Picayune, Miss., to Columbia, approximately 55 miles, the entire distance being through virgin timber lands. J. E. Du Pont, Jr., traffic manager and superintendent, Picayune, Miss.

PENNSYLVANIA RAILROAD.—Work was recently started on a two-story brick and structural steel outbound freight house and bridges connecting with the present inbound house and the Louisiana street viaduct at Buffalo. The building will be 32 ft. wide and 420 ft. long, and will cost about $150,000. The contract has been let to the Geo. H. Shickler & Sons Company, Erie, Pa.

TAMIAMI RAILWAY.—This company has in mind a project to construct and operate a railway between Homestead, Miami, Fort Myers and Chevalier Bay, Fla. The line will secure a business in timber, agricultural products, citrus fruit and stock. J. F. Jaudon is president, and F. K. Ashworth is engineer at Miami, Fla.

RAIL MOTORS IN WAR.—The war, which has led to the development of so many other peaceful appliances and inventions, has witnessed the utilization of the rail motor car on an extraordinarily large scale. We are not referring to the self-contained unit, usually steam propelled, which is so extensively used on branch lines in the United Kingdom, but to the small petrol-driven vehicle principally employed as an inspection car in normal times Vehicles of this type have found a singularly wide scope of utility for military purposes, since their construction and operation render them as fitted for employment on narrow-gage or temporary railways as on standard-gage heavy lines. A French official publication has described a particularly neat type of rail motor used on light railways in the hilly Vosges country. This has a sprung framework of locomotive pattern, the conventional motor car "bonnet," cross seats like those of a tramcar, and a control handle, which also resembles tramway practice. Officers desirous of reaching their destination quickly find these cars very useful. This particular design is typical of many used on various fronts by Allies and enemies.—*Railway Gazette, London.*

SCRAP IRON AND STEEL OF WAR.—Considerable speculation has been going the rounds as to the amount of scrap iron and steel that is accumulating on the battlefields of Europe, and how it is to be disposed of. American companies which regularly deal in such old material have for some time been looking forward to the harvest to be reaped from these battlefields after the war. These hopes have been rather rudely shocked lately by observers recently returned from the front, who state that this matter is now being handled by the respective governments. According to the systems now established in modern warfare, it is stated that a salvage corps is daily going over all the ground near the battle front exposed to fire, and is gathering all the debris discarded by the contending armies. None of the scrap is neglected, with steel worth 2 to 3 cents per pound and copper and other metals in proportion. All the metals are taken to shops in the rear and there worked over to be cast into other various metal munitions that a modern army uses. All the lead that is fired is practically lost, as a bullet traveling at a velocity of 2,000 feet or more per second buries itself so deep into any object it hits as to be lost entirely. Other metals, however, such as tangled steel from wrecked motor cars, large pieces of shells, bits of copper, pieces of aluminum, etc., are carefully collected and later turned into usable conditions.—*Scientific American.*

Railway Financial News

CARTHAGE & COPENHAGEN.—See Deer River Railroad.

CHICAGO & EASTERN ILLINOIS.—The sale of this company, which had been set for September 4 at Danville, Ill., has been postponed indefinitely by Judge G. A. Carpenter, of the United States District Court at Chicago.

DEER RIVER RAILROAD.—A charter has been granted this company by Secretary of State Hugo to operate the 9-mile line formerly owned by the Carthage & Copenhagen Railroad Company, operating between Carthage, N. Y., and Copenhagen. The new company is capitalized at $100,000 in shares of $100 each. The directors are: James A. Outterson, W. B. Van Allen, David W. Balmat, Guy C. Jones, Arthur W. Mattison, of Carthage; Alfred C. Stewart, of Ogdensburg; William T. Twining, Robert A. Ross, Eugene B. Millard, William L. Sheldon and Harry L. Grant, of Copenhagen.

HOCKING VALLEY.—This company has authorized an issue of $5,000,000 6 per cent notes, maturing November 1, 1918, to pay off $4,000,000 note, maturing November 1, 1917, and for other capital required. The directors have issued the following statement: "Last week the Circuit Court of Appeals of Franklin County, Ohio, handed down a decision confirming the right of the Chesapeake & Ohio to own Hocking Valley stock, thereby concurring with a decree to similar effect rendered in 1914 by the United State Court of Cincinnati. Nearly all the other conditions of the decree of last week have been complied with before the decree was rendered, and the remainder are in process of being carried out."

PENNSYLVANIA RAILROAD.—Judge Dickinson in the United States District Court has handed down a decision under which bondholders of the Pennsylvania Canal Company, a subsidiary concern of the Pennsylvania Railroad, will share in a fund of $1,379,941.28. After a long litigation the court held that the loss suffered by the bondholders when the canal company was unable to meet its bonds at maturity, was due to the failure of the railroad to maintain a sinking fund under the terms of a mortgage under which the bonds were issued in 1870. Since that time the railroad has used effort in an attempt to prevent the distribution of the entire fund. In the exceptions to the master's report it was contended by the railroad that it should share in the fund as the holder of detached interest coupons from the canal company's bonds to the amount of $3,116,400, and also a claim for $518,400, the face value of 17,280 interest coupons the railroad had purchased from canal bondholders, should be allowed. In deciding in favor of the bondholders and dismissing the railroad's claims, the court said in part: Accepting as we do the ruling of the state court in the proceedings upon the mortgage, we are bound to conclude that under the terms of the mortgage the interest coupons have priority of payment in the distribution of the proceeds of the mortgaged premises sold as the property of the canal company, and as against the canal company. To hold, however, that the railroad company in an action against it arising under the collateral agreement is entitled as a purchaser of the coupons to a like priority of payment over the bondholders would be to deny the soundness of the reasoning upon which the ruling already made in the case proceeded. The master was, therefore, we think, entirely right in holding (whether the question was strictly res adjudicata or not) that the ruling already made, which resulted in the creation of this fund compels the ruling that the fund created for the payment of the bonds cannot be diverted to the payment of the coupons.

TROLLEY LINES TO REPLACE CHINESE WALLS.—Canton's noted walls, which have stood for centuries, are now being torn down in the interests of progress, and trolley lines are to be built that will completely encircle the city and give the visitor an inexpensive and pleasant means of "seeing Canton." A survey has already been completed and the contract signed. It is expected that work will be begun immediately.

Railway Officers

Executive, Financial, Legal and Accounting

Edson J. Chamberlin, president of the Grand Trunk Pacific and of the Grand Trunk, has resigned and has been succeeded in both positions by H. G. Kelley, formerly vice-president of the Grand Trunk.

Albert J. Gillingham, assistant to the comptroller of the Pennsylvania Railroad, reached 70 years of age on August 23, and will retire at the end of the month under the operation of the pension rules of the company. Mr. Gillingham has been with the Pennsylvania Railroad nearly 48 years. For more than 17 years he was auditor of passenger traffic, and was advanced to the position of assistant to the comptroller on January 1, 1917, in connection with the reorganization of the accounting department.

Operating

T. J. Clarken has been appointed manager of the lighterage department of the Lehigh Valley, with headquarters in New York.

P. L. McManus, general superintendent of the Chicago, Indianapolis & Louisville at Chicago, has resigned, effective August 29.

Hubbard W. Williams has been appointed trainmaster of the Cairo district of the Illinois Central, with headquarters at Fulton, Ky., succeeding H. B. Dezonia, assigned to other duties.

P. F. Gilhoula has been appointed chief train despatcher, fourth district, of the Saint Louis Southwestern of Texas and the Saint Louis Southwestern, with headquarters at Mt. Pleasant, Tex., vice W. A. Downs, resigned; effective August 21.

J. B. Silaz has been appointed acting trainmaster of the Arkansas division of the Chicago, Rock Island & Pacific, vice Kepler Johnson, temporarily assigned to other duties. Mr. Silaz has been succeeded as assigned chief despatcher of the Arkansas division by T. R. Latham; effective August 16.

J. W. Smith, superintendent of car service of the Western Maryland, has been appointed superintendent transportation and has been detailed for special service with the Committee on National Defense at Washington, D. C. He has been succeeded by E. R. Rouzer, who will have headquarters at Baltimore, Md.; effective August 1.

John L. Beven, trainmaster of the Illinois Central at McComb, Miss., has been promoted to terminal superintendent at New Orleans, La., succeeding Frank T. Mooney, resigned. Thomas J. Quigley, roadmaster at McComb, has been promoted to trainmaster, succeeding Mr. Beven, with the same headquarters, effective September 1.

A. A. Gist, trainmaster on the Atchison, Topeka & Santa Fe at Arkansas City, Kan., has been transferred to the Southern Kansas division, with headquarters at Chanute, succeeding T. Cunningham, deceased. Owing to the increase in traffic on this division A. S. Wilkins has also been appointed trainmaster of this district, taking over part of the territory formerly under the jurisdiction of Mr. Cunningham.

Elisha Barton John, whose appointment as superintendent of the Delaware division of the Pennsylvania Railroad was announced in last week's issue, was born at Mt. Carmel, Pa., October 1, 1873. He received his preliminary education at the Bloomsburg State Normal School and the Bethlehem Preparatory School. He was graduated as civil engineer from Lehigh University in 1895. Mr. John entered the Pennsylvania Railroad's service in the engineer corps at Philadelphia, June 24, 1895. He served in that capacity until January 1, 1900, on the Philadelphia, Tyrone and Altoona divisions, when he was promoted to assistant supervisor, serving in that capacity on the Pittsburgh, Altoona and New York divisions, until April 24, 1902, when he was appointed supervisor, and held positions in that capacity on the Delaware, Central, Maryland and Middle

divisions. On December 1, 1908, he was appointed assistant engineer, Delaware division, Philadelphia, Baltimore & Washington Railroad. On March 24, 1909, he was advanced to principal assistant engineer on the Philadelphia, Baltimore & Washington Railroad, and on January 15, 1910, promoted to superintendent, Delaware division of the Philadelphia, Baltimore & Washington.

James A. Morrison, whose appointment as superintendent of the Kentucky division of the Louisville & Nashville, with headquarters at Paris, Ky., has already been announced in these columns, has been in the service of that road continuously since 1886. Mr. Morrison was born December 6, 1868, at Sonora, Ky., and received a common school education. He entered the railroad service in May, 1886. He served for a time as telegraph operator and entered the despatcher's office at Louisville in 1889. He was transferred to Birmingham, Ala., as despatcher in 1891, and subsequently served respectively as chief despatcher of the S. & N. A. division, until October, 1892; master of trains until 1902; assistant superintendent until August, 1907, becoming superintendent of the Kentucky division on August 1, 1917.

C. S. Christoffer, trainmaster of the Illinois and Racine-and-Southwestern divisions of the Chicago, Milwaukee & St. Paul, with headquarters at Savanna, Ill., has been promoted to assistant superintendent of the Milwaukee terminals, with headquarters at Milwaukee, Wis. D. E. Rossiter, trainmaster of the Milwaukee terminals, has been transferred to Savanna, succeeding Mr. Christoffer, and the office of trainmaster of Milwaukee terminals has been abolished. The territory of L. T. Johnston, trainmaster of the Iowa and Minnesota division and the River division, has been confined to the River division, with headquarters at Minneapolis, Minn., and O. N. Harstad has been appointed trainmaster of the Iowa & Minnesota division. W. M. Thurber has been appointed trainmaster of the Dubuque division, with headquarters at Dubuque, Iowa, effective September 1, a new position.

Traffic

Alfred R. Hall has been appointed general agent of the Union Pacific at Lincoln, Neb., effective September 1, succeeding E. B. Slosson, deceased.

F. F. Robins has been appointed commercial agent of the Georgia Southern & Florida at Miami, Fla., vice W. M. Brooks, resigned; effective September 1.

G. N. Snider has been appointed coal traffic manager of the New York Central, with headquarters at New York, effective September 1, vice F. E. Herriman, who is assuming duties on the president's staff.

F. E. Herriman, coal traffic manager of the New York Central, will after September 1 report to the president's office, and will assist in matters pertaining to the coal properties of the companies, and perform such other service as may be assigned.

J. C. O'Boyle, traveling freight agent of the Wabash at Cleveland, Ohio, has been promoted to commercial agent at that city, succeeding R. A. Brown, effective August 16. Mr. Brown resigned to accept an officer's commission in the National army.

Spencer Eakin has been appointed commercial agent of the Georgia Railroad at Nashville, Tenn., succeeding M. H. Lillard, resigned to engage in other business. T. H. Yeargin has been appointed commercial agent at Chattanooga, Tenn., succeeding Mr. Eakin, and B. H. Lumpkin succeeds Mr. Yeargin as commercial agent at Columbia, S. C.

E. L. Dalton, general agent in the freight department of the Chicago & Alton, with headquarters at Chicago, has resigned to become traffic manager of Montgomery, Ward & Co. The position of general agent in the freight deparment at Chicago has been abolished. J. F. Vosburgh, assistant general freight agent at Chicago, will have charge of solicitation in the Chicago territory. T. J. Shea, assistant general agent in the freight department at Chicago, has been appointed commercial agent, with the same headquarters.

Engineering and Rolling Stock

R. W. Burnett has been appointed master car builder of the Delaware & Hudson, with office at Albany, N. Y.; effective September 1.

J. R. Watt, roadmaster of the Louisville & Nashville at Nashville, Tenn., has been promoted to general roadmaster, with headquarters at Louisville, Ky., succeeding Thomas Maney, resigned.

H. B. Holmes, chief engineer of the Kansas City, Mexico & Orient, with headquarters at Kansas City, Mo., has resigned to become associated with Cloverdale & Colpitts, consulting engineers, with offices in New York.

I. M. Brown has been appointed acting engineer maintenance of way of the Indianapolis Terminal division of the Cleveland, Cincinnati, Chicago & St. Louis, with headquarters at Indianapolis, Ind., succeeding C. F. Hinchman, granted leave of absence; effective August 27.

Louis C. Frohman, whose appointment as principal assistant engineer of the Florida East Coast, with headquarters at St. Augustine, Fla., was recently announced in these columns, has been with that company since September 1, 1916. Mr. Frohman was born in Cincinnati, July 18, 1888. He attended the Ohio Northern University, and first entered railway service on November 15, 1909, on the Baltimore & Ohio South Western. He was appointed assistant engineer in the office of the engineer maintenance of way of the Baltimore & Ohio South Western and the Cincinnati, Hamilton & Dayton at Cincinnati, Ohio, January 1, 1913, upon the consolidation of the offices of these roads. He subsequently became assistant engineer in the office of the district engineer of maintenance of way of the Cincinnati, Hamilton & Dayton at Cincinnati, Ohio, on July 1, 1913, and was promoted to assistant division engineer of the Cincinnoati-Toledo division at Dayton, Ohio, on January 1, 1914. He resigned September 1, 1916, to enter the service of the Florida East Coast as assistant engineer maintenance of way at St. Augustine, and it is this position which he is leaving to take up his new duties.

Railway Officers in Military Service

R. A. Brown, commercial agent of the Wabash at Cleveland, Ohio, has resigned to accept an officer's commission in the National army, effective August 16.

T. M. Ward, engineer of bridges and buildings of the Seward division of the Alaskan Government Railways, who has been commissioned captain in the engineering corps of the army, has been assigned to active duty at American Lake, Wash.

OBITUARY

William H. Arnold, terminal engineer of the Lehigh Valley at New York, died August 13 at the age of 53 years. Mr. Arnold came to the Lehigh Valley in January, 1914, and was terminal engineer at New York in charge of the new ore dock at Constable Hook, N. J., and the piers, pier sheds and dredging in New York harbor and at Perth Amboy, N. J.

A Compliment from the Press.—A railwayman has been made First Lord of the Admiralty. This is not surprising. The railway business everywhere is associated with brains and capacity.—*Toronto Globe.*

Railway Building Record in France.—Following is an extract from a letter from one of the officers of No. 2 Battalion, Canadian Railway troops, which is commanded by Lieut.-Col. F. F. Clarke, formerly a Canadian Northern Railway engineer: "We hold the record for railway building in France. We had a very difficult piece to build, because it was in full view of the German lines in daylight for about 1½ miles across a valley. On Tuesday night at 6:30 it started to rain and got very foggy and we got to work, and by midnight on Wednesday we had built 12,069 ft. of line, and ran a train over it. When the air cleared on Thursday the Germans saw the railway track from their observation balloon and started to shell it, and after sending over about 200 shells they broke a rail, which was repaired in a few minutes. This line can only be used at night, without light or noise. We have built 22 miles of light railway and 15 miles of standard gage, with 4 railway yards of about 3 miles of track in each. This makes about 49 miles of railway built and completed in 75 days."—*Canadian Railway and Marine World.*